

# **Joint Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019**

UNION OF INDIA

India

## **Joint Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019**

### **Rule**

### **JOINT-ELECTRICITY-REGULATORY-COMMISSION-TERMS-AND-CONDITIONS-REGULATIONS-2019**

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Joint Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 Published vide Notification F. No. JERC-25/2019, dated 24.7.2019 Last Updated 3rd August, 2019 F. No. JERC-25/2019. - In exercise of the powers conferred under Sub-section (1) of Section 181 read with Clauses (zd), (ze) and (zf) of the Electricity Act, 2003 (Act No. 36 of 2003) (hereinafter referred to as 'the Act'), and all other powers enabling it in this behalf including sub-ordinate legislation, rules, statutory orders, resolutions, clarifications issued by the Government in terms of the Act, the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (UTs), after previous publication, hereby makes the following Regulations, namely:

### **1. Short Title, Scope, Extent and Commencement.**

- 1.1 These Regulations may be called the Joint Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2019 [hereinafter referred to as "Renewable Energy Tariff Regulations, 2019".] 1.2 These Regulations shall extend to the State of Goa and the Union Territories of Andaman and Nicobar Islands, Chandigarh, Dadra & Nagar Haveli, Daman & Diu, Lakshadweep, and Puducherry. 1.3 These Regulations shall come into force from the date of publication in the official gazette.

## 2. Definitions and Interpretations.

- 2.1 Words, terms and expressions defined in the Electricity Act, 2003, as amended from time to time and used in the Renewable Energy Tariff Regulations, 2019 shall have and carry the same meaning as defined and assigned in the said Act. 2.2 All other expressions used herein but not specifically defined in the Act or Regulations but defined under any other law passed by a competent legislature and applicable to the electricity industry in the State of Goa and UTs shall have the meaning assigned to them in such law. Subject to the above, expressions used herein but not specifically defined in the Act or any other law passed by a competent legislature shall have the meaning as is generally assigned in the electricity industry. 2.3 In the interpretation of this Renewable Energy Tariff Regulations, 2019, unless the context otherwise requires: (1) Words in the singular or plural term, as the case may be, shall also be deemed to include the plural or the singular term, respectively; (2) References to any statutes, Regulations or guidelines shall be construed as including all statutory provisions consolidating, amending or replacing such statutes, Regulations or guidelines, as the case may be, referred to; (3) Terms "include" or "including" shall be deemed to be followed by "without limitation" or "but not limited to" regardless of whether such terms are followed by such phrases or words of like import. 2.4 In the Renewable Energy Tariff Regulations, 2019, unless it is repugnant to the context: (1) "Act" means the Electricity Act, 2003 (36 of 2003) and subsequent amendments thereof; (2) "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; (3) "Biomass" means wastes produced during agricultural and forestry operations (for example straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, de-oiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds; and the wood waste produced in some industrial operations; (4) "Biomass gasification" means a process of incomplete combustion of biomass resulting in production of combustible gases consisting of a mixture of Carbon monoxide (CO), Hydrogen (H<sub>2</sub>) and traces of Methane (CH<sub>4</sub>), which is called producer gas; (5) "Biogas" means a gas created when organic matter like crop residues, sewage and manure breaks down in an oxygen-free environment (ferments); (6) "Capital cost" means the capital cost as defined in Regulations 13, 26, 30, 35, 40, 45, 55, 64 and 70 (of the applicable technology); (7) "Capacity Utilisation Factor (CUF in abbreviation)" means the ratio of actual gross energy generated by the project to the equivalent energy output at its rated capacity over the year; (8) "CERC" or "Central Commission" means the Central Electricity Regulatory Commission; (9) "Check Meter" means a meter, which shall be connected to the same core of the current transformer (CT) and voltage transformer (VT) to which main meter is connected and shall be used for accounting and billing of electricity in case of failure of main meter; (10) "COD" or "Commercial Operation Date" or "Date of commercial operation" means the date on which the generating plant is synchronised with the grid system; (11) "Commission" means the Joint Electricity Regulatory Commission for the State of Goa and Union Territories (except Delhi); (12) "Conduct of Business Regulations" means Joint Electricity Regulatory Commission (Conduct of Business) Regulations, 2009, as amended from time to time; (13) "Control Period" means the period during which the norms for determination of tariff specified in these Regulations shall remain in force; (14) "Contracted load" or "Contract demand"

means the maximum demand in kW, kVA or HP, agreed to be supplied by the Licensee and indicated in the agreement executed between the Licensee and the consumer;(15)"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(16)"Energy Purchase Agreement" means an agreement executed between the Distribution Licensee and the Project Developer for procurement of power from Renewable Energy Projects in accordance with the provisions of these Regulations;(17)"Existing Renewable Energy Plants", means renewable generating stations, which have achieved COD prior to coming into force of these Regulations;(18)"Gross Calorific Value" or 'GCV' 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;(19)"Gross 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;(20)"High Tension (HT)" means a voltage level above 440 Volts;(21)"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;(22)"Inter-connection Point" shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be:i. in relation to wind energy projects and solar photovoltaic projects, inter-connection point shall be line isolator on outgoing feeder on HV side of the pooling sub-station;ii. in relation to small hydro power, biomass power and solar thermal power projects, the interconnection point shall be line isolator on outgoing feeder on HV side of generator transformer;(23)"Island area" means Andaman and Nicobar Islands and Lakshadweep under the jurisdiction of the Commission;(24)"Licence" means a licence granted under Section 14 of the Act;(25)"Low Tension (LT)" means the voltage of 230 volts between the phase and neutral or 440 volts between any two phases under normal conditions subject to the percentage variation permissible from time to time;(26)"Mainland area" means all areas other than Island areas falling under the jurisdiction of the Commission;(27)"Maximum Demand" means the highest load measured in average kVA or kW at the point of supply of a consumer during any consecutive period of 30 (thirty) minutes time block or as provided by the Commission, during the billing period;(28)"MNRE" means the Ministry of New and Renewable Energy of the Government of India;(29)"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;(30)"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;(31)"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:
$$NPLF = 10000 \times \frac{SG_i}{N \times IC \times (100 - AUX_n)}\%$$
Where, IC = Installed Capacity of the generating station or unit in MW, SG<sub>i</sub> = Scheduled Generation in MWh for the i<sup>th</sup> time block of the period, N = Number of time blocks during the period, and AUX<sub>n</sub> = Normative Auxiliary Energy Consumption as a percentage of gross energy generation;(32)"Plasma Gasification" is a non-combustion, non-thermal (cold) as well

as thermal (hot) process using plasma, which converts organic and inorganic matter into syngas (synthesis gas primarily made up of Hydrogen and Carbon monoxide), Potable water and Green fuel. A plasma is created to ionize gas and convert waste matter into syngas, which is channelized to generate power through Brayton Heat Cycle.(33)"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;(34)"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 municipal solid waste that can be used as fuel;(35)"Renewable Energy" or "RE" means the grid quality electricity generated from renewable energy sources;(36)"Renewable Energy Power Plants" means the power plants other than the conventional power plants generating grid quality electricity from renewable energy sources;(37)"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;(38)"Small Hydro" means Hydro Power projects with a station capacity up to and including 25 MW;(39)"Solar PV power" means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic;(40)"Solar Thermal power" means the Solar Thermal power project that uses sunlight for direct conversion into electricity through Concentrated Solar Power technology based on either line focus or point focus principle;(41)"Tariff period" means the period for which tariff is to be determined by the Commission on the basis of norms specified under these Regulations;(42)"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;Explanation. - Any Distribution Licensee, Transmission Licensee and generating Units connected to the distribution system and the person availing open access in transmission or distribution system are also included in this term;(43)"Tidal Power" means the Tidal power projects, which use the energy obtained from tidal waves to generate electricity;(44)"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 energy power project	25 years
(b) Biomass power project with Rankine cycle technology	20 years
(c) Small Hydro Plant	35 years
(d) Municipal Solid Waste (MSW)/ and Refuse Derived Fuel (RDF) based power project	20 years
(e) Solar PV/Solar thermal power project With or without Energy Storage	25 years
(f) Hybrid Wind and Solar	25 years
(g) Biomass Gasifier based power project	20 years
(h) Biogas based power project	20 years;

(45)"Year" means a financial year.2.5 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 project, Biomass power based on Rankine cycle, Solar PV with or without energy storage, Solar Thermal power projects, Biomass gasifier, Biogas power project, Municipal Solid Waste, Refuse derived fuel-based power projects, Cold Plasma Gasification projects and Tidal Wave power projects, these Regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

### **4. Eligibility Criteria.**

(1) Wind Power project. - using new wind turbine generators, located at the sites approved by State Nodal Agency/State Government; (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; (3) Solar PV and Solar Thermal Power Project. - Based on technologies approved by MNRE; (4) Biomass Gasifier based Power Project. - The project shall qualify to be termed as a biomass gasifier-based power project, if it is using new plant and machinery and having a Grid connected system that uses 100% producer gas engine, coupled with gasifier technologies approved by MNRE; (5) Biomass Power Project based on Rankine Cycle Technology. - Biomass power projects using new plant and machinery based on Rankine cycle technology and using biomass fuel sources, without use of fossil fuel; (6) 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; (7) 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 Rankine cycle technology and using Municipal Solid Waste (MSW) as fuel sources; (8) Refuse Derived Fuel (RDF) based Power Projects. - The project shall qualify to be termed as a Refuse derived fuel (RDF) based power project, if it is using new plant and machinery based on Rankine cycle technology and using Refuse derived fuel (RDF) as fuel sources; (9) Plasma Gasification based Power Projects. - The project shall qualify to be termed as "Plasma Gasification based power project" if it is using new plant and machinery based on the plasma gasification technology and it is used commercially as a form of waste treatment and has been tested for the gasification of municipal solid waste, biomass, industrial waste, hazardous waste and solid hydrocarbons, such as coal, oil sands, pet coke and oil shale. (10) Tidal Wave Power Projects. - The project shall qualify to be termed as Tidal wave power projects, which uses the energy obtained from tidal waves to generate electricity.

Chapter -1 General Principles

## **5. Control Period.**

- The Control Period under these Regulations shall be of three (3) years starting from the date of the notification of these Regulations, or as extended by the commission upon expiry of the control period. The first year of the control period shall be the financial year 2019-20 :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:

## **6. Tariff Period.**

- 6.1 The Tariff Period for Renewable Energy power projects will be as per their Useful Life as defined in Regulation 2.4 (44).6.2Tariff Period under these Regulations shall be considered from the date of commercial operation of the respective Renewable Energy generating plants.6.3Tariff 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 in accordance with these Regulations for the following types of projects:(1)Solar PV (for Gross Metering);(2)Wind Energy based projects;(3)Small hydro based projects: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 Project Developer shall approach the Commission for determination of Project Specific Tariff: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:(1)Solar Thermal;(2)Biomass Power Projects based on Rankine cycle Technology;(3)Biomass Gasifier based projects;(4)Biogas based projects;(5)Municipal Solid Waste, Refuse Derived Fuel based projects with Rankine cycle technology and plasma gasification as approved by MNRE;(6)Tidal power projects;(7)Solar PV with/without battery bank (Hybrid or Stand-alone)(8)Solar and Wind Hybrid(9)Any other Renewable Energy technology as approved by MNRE.(10)As per third proviso of Regulation 7.1, Project seeking Government subsidy.8.2Determination 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:8.3No annual generic tariff shall be determined for the technologies

mentioned in Clause 8.1 of this Regulation: Provided that the Financial and Operational norms as may be specified in these Regulations 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. 9.2A Petition for determination of Project Specific Tariff shall be filed by the Project developer and shall be accompanied by: 9.2.1 Information in Forms 1.1, 1.2, 2.1 and 2.2 as applicable, and as appended in these Regulations; 9.2.2 Fees for filing the Petition, as applicable; 9.2.3 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). 9.2.4 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 from the Distribution Licensee of the area. 9.2.5 Any other information that the Commission requires from the Petitioner to submit. 9.2.6 The proceedings for determination of tariff shall be in accordance with the JERC (Conduct of Business) Regulations, 2009 as amended from time to time.

## **10. Procurement of Power from Renewable Energy Projects.**

- 10.1 For Renewable Energy Technologies, for which Generic Tariff is determined by the Commission, the Distribution Licensee may procure power from such projects either at the Generic Tariff approved by the Commission or through the competitive bidding process: Provided that 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 for 1 MW and above approved by the Commission, the Distribution Licensee shall file the Petition for prior approval of Energy Purchase Agreement for procurement of power from such Renewable Energy Project(s); Provided further that in case the Distribution Licensee opts to procure power from Renewable Energy Projects through competitive bidding process in accordance with the guidelines issued by the central government, the Generic Tariff determined by the Commission shall act as a ceiling tariff and for such procurement of power, the Distribution Licensee shall file the Petition for adoption of tariff under Section 63 of the Act; Provided also that the Distribution Licensee can procure power from Grid Connected Rooftop mounted, ground mounted and floating Solar Power Project of any capacity less than 1 MW and above 1kW at the Generic Tariff approved by the Commission for Solar PV without specific approval of Energy Purchase Agreement: Provided also that in case the Project Developer intends to set up two Grid Connected Rooftop mounted projects at single Rooftop, one for Net Metering and other for supply of power to Distribution Licensee under Gross Metering, the rooftop area for these two projects shall be separately earmarked and the two projects shall be installed separately without any

interface between the two Projects.10.2For Renewable Energy Projects, for which the Project Specific Tariff is determined by the Commission, the Distribution Licensee shall file the Petition for prior approval of Energy Purchase Agreement for procurement of power from such Renewable Energy Project(s):Provided that in case the Project Developer and Distribution Licensee opt to file the Petition for approval of EPA and determination of tariff, the Project Developer and Distribution Licensee shall file Joint Petition in this regard.10.3The Distribution Licensee shall comply with all the statutory and regulatory provisions for procurement of power from Renewable Energy Projects, as applicable from time to time.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. Provided that the Renewable Energy Power Plant with installed capacity of 5 MW and above shall be required to furnish to Distribution Licensee a month-wise schedule. The Renewable Energy Power Plant shall also co-ordinate with State Load Dispatch Centre in respect to Optimum scheduling and dispatch of electricity as per provisions of the State Grid Code.

## **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 biomass 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.12.2For the purpose of levelized tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered.12.3Levelization shall be carried out for the 'useful life' of the Renewable Energy project.12.4The above principles shall also apply for project specific tariff.Chapter-2 Financial Principles

## **13. Capital Cost.**

- 13.1 The norms for Capital Cost as specified in the subsequent technology specific Chapters shall be inclusive of all capital works including plant and machinery, transportation cost, civil work, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point:Provided that for project specific tariff determination, the generating company shall submit the break-up of Capital Cost items along with its Petition in the manner specified under Regulation 9.



## 14. Debt Equity Ratio.

- 14.1 For the purpose of determination of tariff, the following provisions shall apply:(a)Debt Equity ratio of 70:30 shall be considered:Provided that if the equity actually deployed is less than 30% (thirty percent) the actual equity shall be considered, and if the equity actually deployed is more than 30 % (thirty percent) of the capital cost, equity in excess of 30 % (thirty percent) shall be treated as normative loan:Provided further that the equity invested and loan drawn in foreign currency shall be designated in Indian Rupees on the date of each investment, using the selling rates notified by the Reserve Bank of India on the date of such investment.(b)The Commission shall take into consideration any capital grant or subsidy offered by the Central or State Government or any other agency, while determining the tariff under these Regulations.

## 15. Loan and Finance Charges.

- 15.1 Loan TenureFor the purpose of determination of tariff, a loan tenure of 12 years shall be considered.15.2Interest Rate(a)The loans arrived at in the manner indicated in Regulation 14 shall be considered as gross normative loan for calculation for interest on loan.(b)The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.(c)For the purpose of computation of tariff for Renewable Energy Projects in Mainland Areas, normative interest rate as mentioned in the Table below shall be considered.Table: Normative Interest Rate

Particulars Interest Rates

Mainland	SBI MCLR (One-year tenor) prevalent during thelast available six months + 200 basis points
Island	SBI MCLR (One-year tenor) prevalent during thelast available six months + 300 basis points

(d)Notwithstanding any moratorium period availed by the generating company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

## 16. Depreciation.

- 16.1 The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission.16.2The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.16.3Depreciation rate of 5.83% per annum shall be considered for first 12 years and remaining depreciation shall be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost.16.4Depreciation shall be chargeable from the first year of commercial operation:Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis.

## 17. Return on Equity.

- 17.1 The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation 14.17.2 The normative Return on Equity shall be: (a) 14% for Renewable Energy Projects in Mainland areas; (b) 16% for Renewable Energy Projects in Island areas; to be grossed up by prevailing Minimum Alternate Tax (MAT) rate as on 1st April of available year at the time of determination of tariff for the entire useful life of the project.

## 18. Interest on Working Capital.

- 18.1 The Working Capital requirement in respect of Wind energy projects, Small Hydro Power, Solar PV and Solar thermal power projects shall be computed in accordance with the following: (a) Operation & Maintenance expenses for one month; (b) Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF / PLF) as applicable; (c) Maintenance spares @ 15% of Operation and Maintenance expenses. 18.2 The Working Capital requirement in respect of Biomass power projects with Rankine Cycle technology, Biogas, Biomass Gasifier based power projects, Municipal Solid Waste and Refuse Derived Fuel projects, and Cold plasma projects shall be computed in accordance with the following clause: (a) Fuel costs of four months for normative Plant Load Factor (PLF); (b) Operation & Maintenance expense for one month; (c) Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the target PLF; (d) Maintenance spares @ 15% of annual Operation and Maintenance expenses. 18.3 Normative Rate of Interest on Working Capital shall be considered as follows: Table: Normative Working Capital Interest Rate

### Particulars Interest Rates

Mainland	State Bank of India MCLR (One-Year Tenor) prevalent during the last available six months + 300 basis points
Island	State Bank of India MCLR (One-Year Tenor) prevalent during the last available six months + 400 basis points

## 19. Calculation of CUF/PLF.

- 19.1 The number of hours for calculation of CUF/PLF (wherever applicable) for various RE technologies shall be 8760.

## 20. Operation and Maintenance Expenses.

- 20.1 'Operation and Maintenance' or O&M expenses shall comprise of repair and maintenance (R&M), establishment including employee expenses, and administrative and general (A&G) expenses. 20.2 O&M expenses shall be determined for the Tariff Period based on normative O&M expenses as specified by the Commission subsequently in these Regulations for the first Year of Control Period. 20.3 Normative O&M expenses allowed during first year of the Control Period (i.e. FY

2019-20) under these Regulations shall be escalated at average inflation factor of previous three years considering 60% weightage for the actual point to point inflation over Wholesale Price Index numbers as per Office of Economic Advisor, Ministry of Commerce and Industry, Government of India and 40% weightage for the actual Consumer Price Index for Industrial Workers (all India) as per Labour Bureau, Government of India in the previous three years.

## **21. Rebate.**

- 21.1 For payment of bills to the generating company through letter of credit, a rebate of 2% shall be allowed. 21.2 Where payments are made by any mode other than through letter of credit within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.

## **22. Late payment surcharge.**

- 22.1 In case the payment of any bill payable under these Regulations is delayed beyond a period of 60 days from the date of receipt of bill, a late payment surcharge at the rate of 1.25% per month shall be levied by the generating company.

## **23. Sharing of CDM Benefits.**

- 23.1 The proceeds of the carbon credit (if any) from approved CDM project shall be shared between generating company and concerned distribution company buying renewable power in the following manner, namely, 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station; 23.2 In the second year, the share of the distribution company shall be 10%, which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the distribution company.

## **24. Subsidy or incentive by the Central / State Government.**

- 24.1 The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants 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 as per relevant provisions under Income Tax Act and corporate Income Tax rate; ii. Capitalization of RE project 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

## **25. Taxes and Duties.**

- 25.1 Tariff determined under these Regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government / Administration: Provided that the taxes and duties levied by the appropriate Government / Administration shall be allowed as pass through on actual incurred basis. Chapter-3 Technology Specific Parameters for Wind Energy

## **26. Capital Cost.**

- 26.1 The Capital Cost for Wind Energy Projects shall comprise of the cost of the Wind Turbine Generator including its auxiliaries, land cost, site development charges and other civil works, charges for transportation to site, evacuation cost up to inter-connection point, financing charges and Interest during Construction, and capital investment relating to forecasting and scheduling. 26.2 The Capital Cost for Wind Energy Projects shall be as follows:

- (a) Mainland area: Rs. 5.25 Crore/MW;
- (b) Island areas (Andaman & Nicobar): Rs. 6.25 Crore/MW;
- (c) Island areas (Lakshadweep): Rs. 7.00 Crore/MW;

## **27. Capacity Utilisation Factor (CUF).**

- 27.1 The Capacity Utilisation Factor (CUF) norm for Wind Energy Projects for this Control Period shall be as follows:

Goa	18%
Andaman & Nicobar Islands	18%
Puducherry	21%
Lakshadweep	20%
Daman	19%
Chandigarh	18%
Dadra & Nagar Haveli	18%
DIU	26%

## **28. Operation and Maintenance (O & M) Expenses.**

- 28.1 The normative O&M Expenses for the first year of the Control Period, i.e., FY 2019-20 shall be: (a) 1.5% of the Capital Cost for Wind Energy Projects in Mainland areas; (b) 2% of the Capital Cost for Wind Energy Projects in Island areas. 28.2 The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3.

## **29. Auxiliary Consumption.**

- 29.1 Normative Auxiliary Consumption for the Wind Energy Projects shall be 0.25%.

## **Chapter 4**

### **Technology Specific Parameters for Small Hydro Project**

## **30. Capital Cost.**

- 30.1 The normative Capital Cost for small hydro projects shall be as follows:

Projects in Mainland Areas:

- a. Below 5 MW: Rs. 7.79 Cr/MW,
- b. 5 MW to 25 MW: Rs. 7.07 Cr/MW

Projects in Island Areas:

- a. Below 5 MW: Rs. 10.50 Cr/MW,
- b. 5 MW to 25 MW: Rs. 9.00Cr/MW

30.2 The Capital Cost specified above will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

## **31. Capacity Utilisation Factor.**

- 31.1 CUF for Small Hydel Projects shall be 30%..

## **32. Auxiliary Consumption.**

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

## **33. Operation and Maintenance Expenses.**

- 33.1 The normative O&M Expenses for the first year of the Control Period, i.e., FY 2019-20 shall be:(a)2% of the Capital Cost for Small Hydel Projects in Mainland areas;(b)2.5% of the Capital Cost for Projects in Island areas.33.2The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3.

## **Chapter 5**

### **Technology Specific Parameters for Solar PV Power Project (for Gross metering)**

### **34. Technology Aspects.**

- 34.1 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.

### **35. Capital Cost.**

- 35.1 The normative Capital Cost for Solar PV projects shall be as follows:(a)Solar PV Projects in Mainland Areas: Rs. 5.00 Cr/MW (without capital Subsidy);(b)Solar PV Projects in Island Areas: Rs. 6.00 Cr/MW (without capital Subsidy).35.2The Capital Cost specified above will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

### **36. Capacity Utilization Factor.**

- 36.1 The Capacity Utilization Factor (CUF) for solar PV Projects shall be as shown below:

State / Union Territory	CUF %
Puducherry	18%
Dadra & Nagar Haveli	18%
Lakshadweep	17%
Andaman & Nicobar Islands	17%
Daman	18%
Diu	18%
Chandigarh	17%
Goa	18%

Provided that the Commission may deviate from the norm in case of project specific tariff determination in accordance with Regulations 9.

### **37. Operation and Maintenance Expenses.**

- 37.1 The normative O&M expenses for the first year of the Control Period, i.e., FY 2019-20, shall be:(a)1.5% of Capital Cost for first year, for Solar PV Projects in Mainland Areas;(b)2.0% of Capital Cost for first year, for Solar PV Projects in Island Areas.37.2The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3.

### **38. Auxiliary Consumption.**

- 38.1 The auxiliary consumption factor shall be 0.25% of the gross generation:Provided that the Commission may deviate from the above norm in case of project specific tariff determination in accordance with Regulation 9.

## **Chapter 6**

### **Technology Specific Parameters for Solar Thermal Power Project**

#### **39. Technology Aspects.**

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

#### **40. Capital Cost.**

- 40.1 The Commission shall determine only project specific Capital Cost and tariff based on prevailing market trends for Solar Thermal Power project prevailing at the time of filing Petition for Tariff Determination.

#### **41. Capacity Utilisation Factor.**

- 41.1 The CUF for Solar Thermal Power project shall be determined by the Commission, while approving project specific tariff.

#### **42. Operation and Maintenance Expenses.**

- 42.1 The Commission shall determine project specific O&M expenses based on prevailing market trends for Solar Thermal Power project.

#### **43. Auxiliary Consumption.**

- 43.1 The auxiliary consumption factor shall be 10% of gross normative generation.

## **Chapter 7**

### **Technology Specific Parameters for Biomass Power Projects based on Rankine Cycle Technology**

#### **44. Technology Aspect.**

- 44.1 The norms for tariff determination specified hereunder are for Biomass Power projects based on Rankine cycle technology application using air-cooled or water-cooled condenser.

## **45. Capital Cost.**

- 45.1 The Commission shall determine project specific Capital Cost and tariff for Biomass Power Projects on the Petition filed by Project Developer.

## **46. Plant Load Factor.**

- 46.1 Threshold PLF for determining fixed charge component of Tariff shall be:(a)During 1st year: 70%;(b)From 2nd Year onwards: 80%.

## **47. Auxiliary Consumption.**

- 47.1 The auxiliary power consumption factor shall be as follows:-(a)For the project using water cooled condenser:i. During first year of operation: 11%ii. From 2nd year onwards: 10%(b)For the project using air cooled condenser:i. During first year of operation: 13%ii. From 2nd year onwards: 12%

## **48. Station Heat Rate.**

- 48.1 The Station Heat Rate for Biomass Power projects shall be:(a)For projects using travelling grate boilers: 4200 kcal/kWh;(b)For projects using Atmospheric Fluidised Bed Combustion (AFBC) boilers: 4125 kcal/ kWh.

## **49. Operation and Maintenance Expenses.**

- 49.1 The normative O&M expenses for the first year of the Control Period, i.e., FY 2019-20 shall be 5% of the capital cost for first year.49.2The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3.

## **50. Fuel Mix.**

- 50.1 The Biomass Power plant shall be designed in such a way that it uses different types of non-fossil fuels available within the vicinity of the Biomass Power project such as crop residues, agro-industrial residues, forest residues, etc., and other biomass fuels as may be approved by MNRE.50.2The Biomass Power Generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.50.3The Fuel Price and Calorific Value of Fuel shall be approved by the Commission based on the Petition filed for Project Specific Tariff considering the type of fuel proposed to be used in the Project.50.4Biomass fuel price at the time of determination of tariff may be approved by the Commission based on an independent study if required, to be carried out by constituting a State/ UT level committee consisting of representatives of State/UT Nodal Agency, State Government, Distribution Licensees, biomass power producers association and any other organization.



## **51. Use of Fossil Fuel.**

- 51.1 The use of fossil fuels shall not be considered.

## **52. Monitoring Mechanism for the use of fossil fuel.**

- 52.1 The Project Developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant/Cost Accountant to the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring the fossil and nonfossil fuel consumption) for each month, along with the monthly energy bill.
- 52.2 Non-compliance with the condition of fossil fuel usage by the Project Developer during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such Biomass Power project.

## **53. Revenue Generation from the By-product.**

- Any revenue that is generated from the by products like fertilizers or charcoal shall also be considered while determining the Tariff.

# **Chapter 8**

## **Technology Specific Parameters for Biomass Gasifier Power Projects**

### **54. Technology Aspect.**

- 54.1 The norms for tariff determination specified hereunder are for Biomass Gasifier Power projects.

### **55. Capital Cost.**

- 55.1 The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for Biomass Gasifier Power project based on the Petition filed by Project Developer.

### **56. Plant Load Factor.**

- 56.1 Threshold PLF for determining fixed charge component of tariff shall be 85%.

### **57. Auxiliary Consumption.**

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

## **58. Operation and Maintenance Expenses.**

- 58.1 The Commission shall determine project specific O&M expenses based on prevailing market trends for Biomass Gasifier Power Projects.

## **59. Fuel Mix.**

- 59.1 The Biomass Gasifier Power plant shall be designed in such a way that it uses different types of nonfossil fuels available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues, etc., and other biomass fuels as may be approved by MNRE. 59.2 The Biomass Gasifier based Power Generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements. 59.3 The Fuel Price and Calorific Value of Fuel shall be approved by the Commission based on the Petition filed for Project Specific Tariff considering the type of fuel proposed to be used in the Project. 59.4 Biomass fuel price at the time of determination of tariff may be approved by the Commission based on an independent study if required, to be carried out by constituting a State/ UT level committee consisting of representatives of State/UT Nodal Agency, State Government, Distribution Licensees, biomass power producers association and any other organization.

## **60. Use of Fossil Fuel.**

- 60.1 The use of fossil fuels shall not be considered.

## **61. Monitoring Mechanism for the use of fossil fuel.**

- 61.1 The Project Developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant/Cost Accountant the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring the fossil and nonfossil fuel consumption) for each month, along with the monthly energy bill. 61.2 Non-compliance with the condition of fossil fuel usage by the Project Developer during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such Biomass Power project.

## **62. Revenue Generation from the By-product.**

- Any revenue that is generated from the by products like fertilizers or charcoal shall also be considered while determining the Tariff.

## **Chapter 9**

## **Technology specific parameters for Biogas based Power Projects**

### **63. Technology Aspect.**

- 63.1 The norms for tariff determination specified hereunder are for grid connected biogas-based power projects that use 100% Biogas fired engine, coupled with Biogas technology for co-digesting agriculture residues, manure and other bio- waste as may be approved by MNRE.

### **64. Capital Cost.**

- 64.1 The Commission shall determine only project specific Capital Cost and tariff based on prevailing market trends for Biogas based project.

### **65. Plant Load Factor.**

- 65.1 Threshold PLF for determining fixed charge component of Tariff shall be 90%.

### **66. Auxiliary Consumption.**

- 66.1 The auxiliary power consumption factor shall be 12% for the determination of tariff.

### **67. Operation and Maintenance Expenses.**

- 67.1 The Commission shall determine project specific O&M expenses based on prevailing market trends for Biogas based Power Projects.

### **68. Fuel Cost (Feed stock Price).**

- 68.1 The Fuel Price and Calorific Value of Fuel shall be approved by the Commission based on the Petition filed for Project Specific Tariff considering the type of fuel proposed to be used in the Project. 68.2 Biomass fuel price at the time of determination of tariff may be approved by the Commission based on an independent study if required, to be carried out by constituting a State/ UT level committee consisting of representatives of State/UT Nodal Agency, State Government, Distribution Licensees, biomass power producers association and any other organization.

## **Chapter 10**

### **Technology specific parameters for Power Projects using Municipal Solid Waste/Refuse Derived Fuel and based on Rankine cycle technology**

## **69. Technology Aspect.**

- 69.1 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.

## **70. Capital Cost.**

- 70.1 The Commission shall determine only project specific Capital Cost and tariff based on prevailing market trends for MSW and RDF projects.

## **71. Plant Load Factor.**

- 71.1 Threshold PLF for determining fixed charge component of tariff for the power projects which use MSW and RDF, shall be:

Sl. No.	PLF	MSW	RDF
1	First year	70%	65%
2	From 2nd year onwards	80%	

## **72. Auxiliary Consumption.**

- 72.1 The auxiliary power consumption for MSW / RDF based power projects shall be 15%.

## **73. Station Heat Rate.**

- 73.1 The Station Heat Rate for MSW/RDF based power projects shall be approved by the Commission while determining the Project Specific tariff.

## **74. Operation and Maintenance Expenses.**

- 74.1 The normative O&M expenses for the first year of the Control Period, i.e., FY 2019-20 shall be 5% of Capital Cost for first year for Mainland Areas and 6% of Capital Cost for first year for Island Areas. 74.2 The normative O&M expenses for subsequent years shall be derived in accordance with the escalation mechanism specified at Regulation 20.3.

## **75. Fuel Cost and Calorific Value.**

- 75.1 The Fuel Price and Calorific Value of Fuel shall be approved by the Commission based on the Petition filed for Project Specific Tariff considering the type of fuel proposed to be used in the Project.

## Chapter 11

### Miscellaneous

#### 76. Deviation from norms.

- 76.1 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.

#### 77. Power to Relax.

- 77.1 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.

#### 78. Power to Remove Difficulties.

- 78.1 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.

#### 79. Repeal and Savings.

- 79.1 Save as otherwise provided in this Renewable Energy Tariff, Regulations, 2019, JERC (Grid Connected Ground Mounted and Solar Rooftop and Metering) Regulations, 2015, together with amendments made from time to time, are hereby repealed.

#### 80. Power to amend.

- 80.1 The Commission may at any time add, vary, alter, suspend, modify, amend or repeal any of the provisions of these Regulations. Annexure Form-1.1: Template for (Wind/ small hydro/Solar PV/ Solar Thermal)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation	MW	
	Capacity Utilization Factor (CUF)	Capacity			%%

Commercial Operation Date (COD)	dd/mm/yyyy			
Useful Life	Years			
2	Project Cost	Capital Cost/ MW	Normative Capital Cost	Rs. Crore
Capital Cost	Rs. Crore /MW			
Capital Subsidy, if any	Rs. Crore			
Net Capital Cost	Rs. Crore			
3	Financial Assumption	Debt Equity	Tariff Period	Years
Debt	%			
Equity	%			
Debt Component	Total debt amount	Rs. Crore		
Total equity amount	Rs. Crore			
Loan Amount	Rs. Crore			
Moratorium Period	Years			
Repayment Period (inclmoratorium)	Years			
Interest Rate	%			
Equity Component	Equity Amount	Rs. Crore		
RoE for 1st10 years	% p.a.			
RoE 11thyear onwards	% p.a.			
Discount Rate	%			
Depreciation	Dep Rate for 1st12 years	%		
Dep rate 13thyear onwards	%			
Incentives	GBI, if any	Rs. Crore		
Period for GBI	Years			
4	O& M Expenses	Normative O&M Expenses p.a.		Rs. Crore
O&M Expenses p.a.		Rs. Crore		
Escalation Factor		%		
5	Working Capital	O&M Expenses p.a.	% of O&M Expenses	Month
Maintenance Spares		%		
Receivables		Month		
Interest on WC		%		

## Form - 1.2: Template for (Biomass/MSW/RDF)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation	MW	
Aux Consumption	%				
PLF (1st year)	%				
PLF (2nd year onwards)	%				
COD	dd/mm/yyyy				
Useful Life	Years				
2	Project Cost	Capital Cost/MW	Normative Capital Cost	Rs. Crore	
Capital Cost	Rs. Crore /MW				
Capital Subsidy, if any	Rs. Crore				
Net Capital Cost	Rs. Crore				
3	Financial Assumption	Debt Equity	Tariff Period	Years	
Debt	%				
Equity	%				
Debt Component	Total debt amount	Rs. Crore			
Total equity amount	Rs. Crore				
Loan Amount	Rs. Crore				
Moratorium Period	Years				
Repayment Period (incl moratorium)	Years				
Interest Rate	%				
Equity Component	Equity Amount	Rs. Crore			
RoE for 1st 10 years	% p.a.				
RoE 11th year onwards	% p.a.				
Discount Rate	%				
Depreciation	Dep Rate for 1st 12 years	%			
Dep rate 13th year onwards	%				
Incentives	GBI, if any	Rs. Crore			
Period for GBI	Years				
4	O& M Expenses	Normative O&M Expenses		Rs. Crore	

O&M Expenses p.a.		Rs. Crore		
Escalation Factor		%		
5	Working Capital	O&M Expenses	% of O&M Expenses	Month
Maintenance Spares		%		
Receivables		Month		
Interest on WC		%		
6	Fuel Related assumptions	Station Heat Rate	During 1styear	Kcal/kWh
2ndyear onwards	Kcal/kWh			
Fuel Type and mix	Fuel Type-1	%		
Fuel Type-2	%			
MSW		%		
RDF		%		
Fossil Fuel (Coal)		%		
GCV of Fuel Type-1		Kcal/kWh		
GCV fo Fuel Type-2		Kcal/kWh		
GCA of MSW		Kcal/kWh		
GCA of RDF		Kcal/kWh		
GCA of Fossil Fuel (Coal)		Kcal/kWh		
Biomass Price (fuel Type-1)/Yr 1		Rs./MT		
Biomass Price (fuel Type-2)/Yr 1		Rs./MT		
MSW Price/Yr 1		Rs./MT		
RDF Price/Yr 1		Rs./MT		
Fossil Fuel (Coal) Price)/ Yr 1		Rs./MT		
Fuel Price Escalation Factor		% p.a		
Form - 2.1: Template for (Wind/ small hydro/Solar PV/Solar Thermal): Determination of Components - Yearwise upto Useful Life				
Units Generation	Unit	Yr 1	Yr 2	Yr 3
		Yr 4	”””	”””
		””	”””	”””
Installed Capacity	MW			
Net Generation	MU			
Tariff Components (Fixed charges)				
O&M Expenses		Rs. Crore		
Depreciation		Rs. Crore		



Interest on Loan	Rs. Crore
Interest on working capital	Rs. Crore
Return on Equity	Rs. Crore
Total Fixed Cost	Rs. Crore

Per Unit Tariff Components

Per Unit O&M Expenses	Rs./kWh
Per Unit Int on term loan	Rs./kWh
Per unit interest on working capital	Rs./kWh
Per unit RoE	Rs./kWh
Per Unit Tariff Components	Rs./kWh

Levillised Tariff

Discount Factors

Discount Tariff Components	Rs./kWh
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Levillized Tariff	Rs/kWh
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Form-2.2: Template for (Biomass/ MSW/RDF): Determination of Tariff Components - Yearwise upto Useful Life

Units Generation Unit Yr 1 Yr 2 Yr 3 Yr 4 ,,, ,,, , ,,, ,,,

Installed Capacity MW

Net Generation MU

Tariff Components (Fixed charges)

O&M Expenses	Rs. Crore
Depreciation	Rs. Crore
Interest on Loan	Rs. Crore
Interest on working capital	Rs. Crore
Return on Equity	Rs. Crore
Total Fixed Cost	Rs. Crore

Tariff Components (Fixed)

Per Unit O&M Expenses	Rs./kWh
Per Unit Int on term loan	Rs./kWh
Per unit interest on working capital	Rs./kWh
Per unit RoE	Rs./kWh
Per Unit Tariff Components	Rs./kWh

Tariff Components (Variable)

Fuel Type-1	Rs Crore
Fuel Type-2	Rs Crore
Fossil Fuel (Coal)	Rs Crore
Municipal Solid Waste	Rs Crore

Refuse Derived Fuel	Rs Crore
Sub-Total (Fuel Costs)	Rs Crore
Fuel Cost allowable to power	Rs Crore
Levillised Tariff	
Discount Factors	
Discount Tariff Components (Fixed)	Rs./kWh
Discount Tariff Components (Variable)	Rs./kWh
Discount Tariff Components (Total)	Rs./kWh
Levillized Tariff (Fixed)	Rs./kWh
Levillized Tariff (Variable)	Rs./kWh
Levillized Tariff (Total)	Rs./kWh