MAHARASHTRA ELECTRICITY REGULATORY COMMISSION
MUMBAI

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION (TERMS AND CONDITIONS FOR DETERMINATION OF RE TARIFF) REGULATIONS, 2010

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Electricity Act, 2003

No.MERC/Legal/2010/482/ In exercise of powers conferred under Section 61, 66, 86 read with Section 181 of the Electricity Act, 2003, and all other powers enabling it in this behalf, and after previous publication, the Maharashtra Electricity Regulatory Commission hereby makes the following Regulations, namely:

1. Short title and commencement

1.1 These Regulations may be called the Maharashtra Electricity Regulatory Commission (Terms and Conditions for determination of RE Tariff) Regulations, 2010.

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

2. Definitions and Interpretation

2.1 In these Regulations, unless the context otherwise requires,-

(a) 'Act' means the Electricity Act, 2003 (36 of 2003), including amendments thereto;

(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, deoiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds; and the wood waste produced in some industrial operations;

(d) 'Capital cost' means the capital cost as defined in Regulations 12, 24, 28, 35, 49, 64 and 68;

(e) 'Commission' means the Maharashtra Electricity Regulatory Commission referred to in section 82 of the Act;

(f) 'Central Commission' or 'CERC' shall mean Central Electricity Regulatory Commission referred to in sub-section (1) of Section 76 of the Act;

(g) 'CERC RE Tariff Regulations' shall mean Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2009, as amended from time to time.

(h) ‘Conduct of Business Regulations’ means the Maharashtra Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 as amended from time to time;

(i) ‘Control Period' or 'Review Period’ means the period during which the norms for determination of tariff specified in these Regulations shall remain valid;

(j) ‘Date of Commissioning’ means in relation to a unit of generating station shall mean the date declared by Generating Company.

(k) ‘Existing RE Project’ means the renewable energy project whose date of commissioning falls prior to date of notification of these Regulations;

(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 ‘SHR’ means the heat energy input in kcal required to generate one kWh of electrical energy at generator terminals of a thermal generating station;

(n) ‘Hybrid Solar Thermal Power Plant’ means the solar thermal power plant that uses other forms of energy input sources along with solar thermal energy for electricity generation, and wherein not less than 75% of electricity is generated from solar energy component.

(o) ‘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;

(p) ‘Inter-connection Point’ shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be:

1. in relation to wind energy projects and Solar Photovoltaic Projects, inter-connection point shall be the line isolator on outgoing feeder on HV side of the pooling sub-station;

   Provided the Pooling Sub-station shall mean the sub-station at project site of the windfarm or solar power plant, as the case may be, and shall constitute step-up transformer and associated switchgear, and to the LV side of which, multiple (more than one) generating unit(s) (i.e. wind turbine generators or solar PV modules/arrays/inverter units) are connected.

2. in relation to mini/micro hydro power, small hydro power, biomass power and non-fossil fuel based co-generation power projects and Solar Thermal Power Projects the, inter-connection point shall be the line isolator on outgoing feeder on HV side of generator transformer;

(q) ‘MNRE’ means the Ministry of New and Renewable Energy of the Government of India.

(r) ‘Mini/Micro Hydro’ means Hydro Power projects with a station capacity up to and including 1 MW.

(s) ‘New RE Project’ means the renewable energy project whose date of commissioning shall be subsequent to the date of notification of these Regulations;

(t) ‘Non-firm power’ means the power generated from renewable sources, the hourly variation of which is dependent upon nature’s phenomenon like sun, cloud, wind, etc., that cannot be accurately predicted.

(u) ‘Non fossil fuel based co-generation’ means the process in which more than one form of energy (such as steam and electricity) are produced in a sequential manner by use of biomass provided the project may qualify to be a co-generation project if it fulfills the eligibility criteria as specified in clause (5) of Regulation 4.

(v) '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;

(w) 'Project' means a generating station or the evacuation system upto inter-connection point, as the case may be, and in case of a small hydro generating station includes all components of generating facility such as dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;

(x) ‘Renewable Energy’ means the grid quality electricity generated from renewable energy sources.

(y) ‘Renewable Energy Power Plants’ means the power plants other than the conventional power plants generating grid quality electricity from renewable energy sources.

(z) ‘Renewable Energy Sources’ means renewable sources such as mini, micro and small hydro, wind, solar, biomass including bagasse, bio fuel co-generation, urban or municipal waste and such other sources as recognized or approved by the MNRE;

(aa) ‘Small Hydro’ means Hydro Power projects with a station capacity more than 1 MW and up to and including 25 MW.

(bb) ‘Solar PV power’ means the Solar Photo Voltaic power projects that uses sunlight for direct conversion into electricity through Photo Voltaic technology.

(cc) ‘Solar rooftop PV and other small solar power’ means the Solar rooftop or other small solar Photo Voltaic power projects that uses Photo Voltaic technology for generation of electricity, which are mounted on rooftop of buildings or ground mounted installations, and satisfying any other eligibility criteria as may be specified by MNRE from time to time.

(dd) 'Solar Thermal power' means the Solar Thermal power projects that uses sunlight for direct conversion into electricity through Concentrated Solar Power technology based on either line focus or point focus principle.

(ee) 'Tariff period' means the period for which tariff is to be determined by the Commission on the basis of norms specified under these Regulations;

(ff) '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, non-fossil fuel co-generation	20 years
c)	Mini/Micro and Small Hydro Power Plants	35 years
d)	Solar PV/Solar thermal power plants	25 years
e)	Solar rooftop PV systems and small ground mounted PV systems	25 years
f)	Municipal waste based power plants	20 years

(gg) 'Year' means a financial year.

2.2 Save as aforesaid and unless repugnant to the context or if the subject matter otherwise requires, words and expressions used in these Regulations and not defined, but defined in the Act, or the Indian Electricity Grid Code or Maharashtra State Grid Code or the Maharashtra Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2005 and amendments thereof shall have the meanings assigned to them respectively in the Act or the Indian Electricity Grid Code or Maharashtra State Grid Code or the Maharashtra Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2005 and amendments thereto.

3. Scope of Regulations and extent of application

3.1 These Regulations shall apply for all new RE projects to be commissioned within Maharashtra for generation and sale of electricity from such RE projects to all distribution licensees within Maharashtra subsequent to date of notification of these Regulations and where tariff, for a generating station or a unit thereof based on renewable sources of energy, is to be determined by the Commission under Section 62 read with Section 86 of the Act.

Provided that in case of wind, mini/micro hydro projects, small hydro projects, biomass power, non-fossil fuel based cogeneration projects, solar PV, Solar Thermal, Solar rooftop PV and other small solar power projects, these Regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4;

Provided that in cases where renewable energy (hereinafter referred to as "RE") projects opt to adopt REC mechanism formulated under the MERC (RPO, Its Compliance and Implementation of REC framework) Regulations, 2010, (hererinafter referred to as "MERC RPO and REC Regulations"), the pricing mechanism for such RE projects shall be governed by the pricing mechanism and related terms and conditions as outlined under the said MERC RPO and REC Regulations.

3.2 In case of existing RE projects, applicable tariff and other terms and conditions, shall be governed by respective RE Tariff Orders and amendments thereof as issued from time to time by the Commission and the tariff, tariff structure and other conditions as

specified under respective RE Tariff Order shall continue to be applicable for such existing RE projects over the duration of the Tariff Period as stipulated under respective RE Tariff Orders.

3.3 For existing and new projects based on renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based co-generation projects, the tariff, tariff structure and other conditions as specified under respective RE Tariff Order shall continue to be applicable for first three years of the Control Period, i.e., FY 2010-11, FY 2011-12 and FY 2012-13.

4. Eligible Entities

4.1 Wind power project – New Wind power project(s) to be commissioned subsequent to notification of these Regulations and located at the wind sites having minimum annual mean Wind Power Density (WPD) of 200 Watt/m^2 measured at hub height of 50 metres and using new wind turbine generators.

4.2 Small hydro project – New Small hydro project(s) to be commissioned subsequent to notification of these Regulations and located at the sites approved by State Nodal Agency/State Government using new plant and machinery, and with installed power plant capacity lower than or equal to 25 MW at single location.

4.3 Mini /Micro hydro project – New Mini /Micro hydro project(s) to be commissioned subsequent to notification of these Regulations and located at the sites approved by State Nodal Agency/State Government using new plant and machinery, and with installed power plant capacity lower than or equal to 1 MW at single location.

4.4 Biomass power project – New Biomass power project(s) to be commissioned subsequent to notification of these Regulations and using new plant and machinery based on Rankine cycle technology and using biomass fuel sources, provided use of fossil fuel is restricted as stipulated under Clause 42.1 of these Regulations.

4.5 Non-fossil fuel based co-generation project: New non-fossil fuel based co-generation project to be commissioned subsequent to notification of these Regulations shall qualify to be termed as a non-fossil fuel based co-generation project, if it is using new plant and machinery and is in accordance with the definition and also meets the qualifying requirement outlined below. Provided that use of fossil fuel is restricted as stipulated under Clause 58.1 of these Regulations:

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

Provided that for the co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half the useful thermal output should be greater than 45% of the facility's energy consumption, during season.

Explanation.- For the purposes of this Clause

'Useful power output' is the gross electrical output from the generator. There will be an auxiliary consumption in the co-generation plant itself (eg. 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.

'Useful Thermal Output' is the useful heat (steam) that is provided to the process by the co-generation facility.

'Energy Consumption' of the facility is the useful energy input that is supplied by the fuel.

4.6 Non-fossil fuel based non-qualifying co-generation (NFNQC) shall mean non-fossil fuel based co-generation projects that do not fulfill above eligibility criteria as outlined under Regulation 4.5.

4.7 Solar PV, Solar Thermal Power Projects, Solar rooftop PV systems and other small Solar power projects – Based on Technologies approved by MNRE.

4.8 Municipal waste based power plants – Based on Technologies approved by MNRE.

5. Control Period or Review Period

5.1 The Control Period or Review Period under these Regulations shall be of five (5) financial years. First year of the Control Period shall commence from the date of notification of these Regulations and shall cover upto the end of financial year 2014-15.

Provided further that the tariff determined as per these Regulations for the RE projects commissioned during the Control Period, shall continue to be applicable for the RE projects for the entire duration of the Tariff Period as specified in Regulation 6 below;

Provided also that the revision in Regulations for next Control Period shall be notified separately 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.

5.2 Notwithstanding anything contained in these Regulaitons, a) the generic preferential tariff determined for Solar PV projects based on the capital cost and other norms applicable for the year 2010-11 shall also apply for such projects during the year 2011-12; and b) the generic preferential tariff determined for Solar thermal projects based on the capital cost and other norms for the year 2010-11 shall also apply for such projects during the years 2011-12 and 2012-13,

Provided that (i) the Power Purchase Agreements in respect of the Solar PV projects and Solar thermal projects as mentioned in this clause are signed on or before 31st March, 2011; and (ii) the entire capacity covered by the Power Purchase Agreements is commissioned on or before 31st March, 2012 in respect of Solar PV projects and on or before 31st March, 2013 in respect of Solar thermal projects.

6. Tariff Period

6.1 The Tariff Period for Renewable Energy power projects except in case of Small hydro projects upto and including 5 MW, Mini/Micro Hydro projects, Solar PV, Solar thermal power projects, Solar rooftop PV and other small Solar power projects shall be thirteen (13) years.

6.2 In case of Small hydro projects upto and including 5 MW and Mini/Micro Hydro projects, the Tariff Period shall be thirty five (35) years.

6.3 In case of Solar PV, Solar thermal power projects, Solar rooftop PV and other small Solar power projects, the Tariff Period shall be twenty five years (25) years.

6.4 Tariff Period under these Regulations shall be considered from the date of commercial operation of the renewable energy generating stations.

6.5 Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects, only for the duration of the Tariff Period as stipulated under Regulation 6(1), (2) and (3).

7. Project Specific tariff

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

a) Municipal Waste based Projects

b) any other new renewable energy technologies approved by MNRE

c) the renewable energy projects that have been commissioned before the notification of these Regulations but for which no energy purchase agreement has been signed and have not opted for the pricing mechanism under the REC mechanism formulated under the MERC (RPO, Its Compliance and Implementation of REC framework) Regulations, 2010, until the date of notification of these Regulations.

d) Solar PV and Solar Thermal Power projects, if a project developer opts for project specific tariff: Provided that the Commission while determining the project specific tariff for Solar PV and Solar Thermal projects shall be guided by the provisions of Chapter 8 of these Regulations.

e) Hybrid Solar Thermal Power plants

f) Biomass project other than that based on Rankine Cycle technology application with water cooled condenser.

7.2 Determination of project specific tariff for generation of electricity from such renewable energy sources shall be in accordance with such terms and conditions as stipulated under relevant Orders of the Commission.

Provided that the financial norms as specified under Chapter-2 of these Regulations, except for capital cost and O&M cost, shall be ceiling norms while determining the project specific tariff.

8. Petition and proceedings for determination of tariff

8.1 The Commission shall notify the generic preferential tariff on suo-motu basis pursuant to issuance of revised norms by Central Electricity Regulatory Commission at the beginning of each year of the Control Period for renewable energy technologies for which norms have been specified under the Regulations.

Provided that for the first year of Control Period, (i.e. FY 2010-11), the generic tariff on suo-motu basis may be determined within a period not exceeding three months from the date of notification of these Regulations.

8.2 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 to 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.

8.3 The proceedings for determination of tariff shall be in accordance with the Conduct of Business Regulations.

9. Tariff Structure

9.1 The tariff for renewable energy technologies shall be single-part tariff consisting of the following fixed cost components:

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

Provided that for renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based co-generation projects, single-part tariff with two components, viz., fixed cost component and fuel cost component, shall be determined.

10. Tariff Design

10.1 The generic tariff shall be determined on levellised basis for the Tariff Period.

Provided that for renewable energy technologies having single-part tariff with two components, tariff shall be determined on levellised basis considering the year of commissioning of the project for fixed cost component while the fuel cost component shall be specified on year of operation basis.

10.2 For the purpose of levellised tariff computation, the discount factor equivalent to normative weighted average cost of capital shall be considered.

10.3 Levellisation shall be carried out for the 'useful life' of the Renewable Energy project while tariff shall be specified for the period equivalent to 'Tariff Period'.

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

11.1 All renewable energy power plants except for biomass power plants and co-generation plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

11.2 The biomass power generating station and co-generation projects shall be subjected to scheduling and despatch code as specified under the State Grid Code (SGC) including amendments thereto.

Chapter 2: Financial Principles

12. Capital Cost

12.1 The norms for the Capital Cost as specified in the subsequent technology specific chapters shall be inclusive of all capital work including plant and machinery, civil work, erection and commissioning, financing costs, preliminary and pre-operative expenses, and interest during construction, and evacuation infrastructure up to inter-connection point.

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

13. Debt Equity Ratio

13.1 For suo-motu determination of generic tariff, the debt equity ratio shall be 70 : 30.

13.2 For project specific tariff, the following provisions shall apply:

If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.

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

Provided further that the equity invested in foreign currency shall be denominated/ designated in Indian rupees on the date of each investment.

14. Loan and Finance Charges

14.1 **Loan Tenure**:

For the purpose of determination of tariff, loan tenure of 10 years shall be considered.

14.2 **Interest Rate**:

The loans arrived at in the manner indicated above shall be considered as gross normative loan for calculation of interest on loan. 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.

For the purpose of computation of tariff, the normative interest rate shall be considered as average of State Bank Advance Rate (SBAR) prevalent during the previous year plus 150 basis points.

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.

15. Depreciation

15.1 The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The salvage value of the asset shall be considered as

10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

15.2 Annual Depreciation shall be based on 'Differential Depreciation Approach' using 'Straight Line Method'.over two distinct periods comprising loan tenure and period beyond loan tenure over useful life. The depreciation rate for the first 10 years of the Tariff Period shall be 7% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 11th year onwards.

15.3 Depreciation 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.

16. Return on Equity

16.1 The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation 13.

16.2 The normative Return on Equity shall be:

a) Pre-tax 19% per annum for the first 10 years.
b) Pre-tax 24% per annum 11th year onwards.

17. Interest on Working Capital

17.1 The Working Capital requirement in respect of wind energy projects, small hydro power, solar PV and Solar thermal power projects shall be computed as under:

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);
c) Maintenance spare @ 15% of operation and maintenance expenses

17.2 The Working Capital requirement in respect of biomass power projects and non-fossil fuel based co-generation projects shall be computed as under:

a) Fuel costs for four months equivalent to 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 spare @ 15% of operation and maintenance expenses

17.3 Interest on Working Capital shall be at interest rate equivalent to average State Bank Advance Rate (SBAR) during the previous year plus 100 basis points.

18. Operation and Maintenance Expenses

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

18.2 Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission subsequently in these Regulations for the first Year of Control Period.

18.3 Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2010-11) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period.

19. Rebate

19.1 For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.

19.2 Where payments are made 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.

20. Late payment surcharge

20.1 In case the payment of any bill for charges payable under these Regulations is delayed beyond a period of 60 (sixty) days from the date of billing, a late payment surcharge at the rate of 1.25% per month shall be levied by the generating company.

21. Sharing of CDM Benefits

21.1 All risks, costs and efforts associated with the availing of carbon credits shall be borne by the generating company. Further, the entire proceeds of carbon credit from approved CDM project, if any, shall be retained by the generating company.

22. Subsidy or incentive by the Central/State Government

22.1 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:

a) 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.
b) Capitalisation of RE projects during second half of the fiscal year.
c) Per unit benefit shall be derived on levellised basis at discount factor equivalent to weighted average cost of capital.

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

23. Taxes and Duties

23.1 Tariff determined under these Regulations shall be exclusive of taxes and duties on generation and sale of electricity from renewable energy project as may be levied by the appropriate Government:

Provided that the taxes and duties levied by the appropriate Government on generation and sale of electricity from renewable energy project shall be allowed as pass through on actual incurred basis.

Chapter 3: Technology specific parameters for Wind Energy Projects

24. Capital Cost

24.1 The capital cost for wind energy projects shall include Wind turbine generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and Interest During Construction (IDC).

24.2 The capital cost for wind energy projects shall be Rs.467.13 Lakh/MW (FY 2010- 11 during first year of Control Period) and shall be revised for projects to be commissioned in each subequent year as outlined under Regulation 25.

25. Capital Cost Indexation Mechanism

25.1 The indexed Capital Cost in case of wind energy projects for each year of the Control Period shall be notified pursuant to issuance of such indexed capital cost for wind energy projects by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

26. Capacity Utilisation Factor

26.1 Capacity Utlisation Factor (CUF) norms for the Control Period shall be as follows:

Annual Mean Wind Power Density (W/m^2)	CUF
200-250	20%
250-300	23%
300-400	27%
> 400	30%

26.2 The annual mean wind power density specified in Regulation 26.1 above shall be measured at 50 metre hub-height.

26.3 For the purpose of classification of wind energy project into particular wind zone class, the State-wise wind power density map prepared by the Centre for Wind Energy Technology (C-WET) and enclosed as Schedule to these Regulations, shall be considered.

Provided that the Commission may by notification in official gazette, amend the schedule from time to time, based on the input provided by C-WET/MNRE.

27. Operation and Maintenance Expenses

27.1 Normative O&M expenses for the first year of the Control Period (i.e. FY 2010-11) shall be Rs 6.87 Lakh per MW.

27.2 Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 5.72% per annum over the tariff period to compute the levellised tariff.

Chapter 4: Technology specific parameters for Small Hydro Project

28. Capital Cost

28.1 The normative capital cost for small hydro projects during first year of Control Period (FY 2010-11) shall be as follows:

Project Size	Capital Cost (Rs Lakh/MW)
> 1 MW and upto and including 5 MW	498.88
> 5 MW to 25 MW	453.53

28.2 The capital cost for subsequent years shall be revised for projects to be commissioned in each subequent year as outlined under Regulation 29.

29. Capital Cost Indexation Mechanism

29.1 The indexed Capital Cost in case of Small Hydro projects for each year of the Control Period shall be notified pursuant to notification of such indexed capital cost for Small Hydro projects by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

30. Capacity Utilisation Factor

30.1 Capacity Utilisation factor for small hydro projects shall be 30%.

31. Auxiliary Consumption

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

32. Operation and Maintenance Expenses

32.1 Normative O&M expenses for the first year of the Control Period (i.e., FY 2010-11) shall be as follows:

Project Size	O&M Expense (Rs Lakh/ MW)
> 1 MW and upto and including 5 MW	17.97
> 5 MW to 25 MW	12.69

32.2 Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 5.72% per annum for the Tariff Period for the purpose of determination of levellised tariff.

33. Tariff for Mini/Micro Hydro Projects

33.1 Tariff for Mini/Micro Hydro Projects shall be higher by Rs 0.50/kWh or such other higher amount as may be stipulated by Commission from time time over and above the tariff applicable for Small Hydro Projects with installed capacity more than 1 MW but upto and including 5 MW.

Chapter 5: Technology specific parameters for Biomass based Power Projects

34. Technology Aspect

34.1 The norms for tariff determination specified hereunder are for biomass power projects based on Rankine cycle technology application using water cooled condenser.

35. Applicability

35.1 The capital cost and performance norms as specified under Regulation 36 to Regulation 40 shall be applicable only for new biomass power projects with effect from April 1, 2013.

35.2 The fuel related aspects specified under Regulation 41 to Regulation 47 shall be applicable for existing and new biomass power projects with effect from April 1, 2013:

Provided that norms in respect of Station Heat Rate, Gross Calorific Value and Auxiliary Consumption factor for existing biomass power projects shall be as stipulated under the respective RE tariff Order as referred under Regulation 3.2.

36. Capital Cost Indexation Mechanism

36.1 The indexed Capital Cost in case of Biomass Power projects for fourth and fifth year of the Control Period (i.e. FY 2013-14 and FY 2014-15) shall be notified pursuant to notification of such indexed capital cost for Biomass Power projects by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations:

Provided that for the purpose of above indexation, the normative capital cost for the biomass power projects shall be considered as Rs.402.54 Lakh/MW for the first year of the Control Period (i.e. FY 2010-11).

37. Plant Load Factor

37.1 Threshold Plant Load Factor for determining fixed charge component of Tariff shall be:

a) During Stabilisation: 60%
b) During the remaining period of the first year (after stabilization): 70%
c) From 2nd Year onwards: 80 %

37.2 The stabilisation period shall not be more than 6 months from the date of commissioning of the project.

38. Auxiliary Consumption

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

39. Station Heat Rate

39.1 The Station Heat Rate for new biomass power projects shall be 3800 kcal/kWh.

40. Operation and Maintenance Expenses

40.1 Normative Operation & Maintenance (O&M) expenses for the first year of the Control Period (i.e., FY 2010-11) shall be Rs. 21.41 Lakh per MW.

40.2 Normative O&M expenses allowed at the commencement of the Control Period (i.e., FY 2010-11) under these Regulations shall be escalated at the rate of 5.72% per annum.

41. Fuel Mix

41.1 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 biomass power project such as crop residues, agro-industrial residues, forest residues, etc., and other biomass fuels as may be approved by MNRE.

41.2 The biomass power generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

42. Use of Fossil Fuel

42.1 The use of fossil fuels shall be limited to the extent of 15% of total fuel consumption on annual basis or as ammended by MNRE from time to time.

43. Monitoring Mechanism for the use of fossil fuel

43.1 The project developer shall furnish a monthly fuel procurement statement and monthly fuel usage statement duly certified by Chartered Accountant to the beneficiary, with whom the power purchase agreement has been made (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring the fossil and non-fossil fuel consumption) for each month, along with the monthly energy bill. The statement shall cover details such as –

a) Quantity of fuel (in tonnes) for each fuel type (biomass fuels and fossil fuels) procured and consumed during the month for power generation purposes,
b) Cumulative quantity (in tonnes) of each fuel type procured and consumed till the end of that month during the year,
c) Actual (gross and net) energy generation (denominated in kWh) during the month,
d) Cumulative actual (gross and net) energy generation (denominated in kWh) until the end of that month during the year,
e) Opening fuel stock quantity (in tonnes),
f) Receipt of fuel quantity (in tonnes) at the power plant site and
g) Closing fuel stock quantity (in tonnes) for each fuel type (biomass fuels and fossil fuels) available at the power plant site.

43.2 Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall render such biomass power project to be ineligible to avail preferential tariff determined as per these Regulations from the date of default and for duration of the default during such financial year when such default occurs. However, such defaulting Biomass Power Project shall continue to sell power to

concerned distribution licensee even during the period of default at a rate lower by Rs 0.50/kWh below the applicable preferential tariff determined as per these Regulations.

44. Compliance Monitoring

44.1 The Maharashtra Energy Development Agency (MEDA) shall be responsible for monitoring compliance of biomass projects with these Regulations.

44.2 MEDA shall maintain such data, including technical and commercial details of biomass projects in the State and shall make the data available in the public domain by publishing the same on its website with quarterly updation.

44.3 The project developer shall submit the information to MEDA as required under Regulation 43 in the format as specified in schedule templates-1.1, 1.2, 2.1 and 2.2.

44.4 The Commission shall reimburse to MEDA the reasonable expenses incurred in connection with the compliance monitoring activities in respect of biomass power projects.

44.5 In addition to the above monotring mechanism, the developer shall also submit on an annual basis, such necessary financial Statements or documents as stipulated from time to time to enable the Commission to ascertain that the financial returns to the developers are in accordance with the regulated returns specified under these Regulations.

45. Calorific Value

45.1 The average Calorific Value of the biomass fuel(s) used for the purpose of determination of tariff for new biomass power projects shall be 3611kcal/kg.

46. Fuel Cost

46.1 Biomass fuel price shall be 2605 Rs/MT during first three years of the Control Period (i.e., FY 2010-11, FY 2011-12 and FY 2012-13) and thereafter shall be linked to indexation mechanism as specified under Regulation 47.

47. Fuel Price Indexation Mechanism

47.1 In case of (existing and new) biomass power projects, the following indexing mechanism for adjustment of fuel prices for each year of operation, from April 1, 2013, will be applicable for determination of applicable variable charge component of tariff:

The indexed Biomass Fuel Price (Pn) in case of Biomass Power projects for each year (n) of the Control Period shall be notified pursuant to notification of such indexed Biomass Fuel Price norm as applicable for Biomass Power projects within Maharashtra by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

Where,

P (n) = Price per ton of biomass for the nth year to be considered for tariff determination

P (n-1) = Price per ton of biomass for the (n-1)th year to be considered for tariff determination. P1 shall be Biomass price for FY 2010-11 as specified under Regulation 46

47.2 Variable Charge for the nth year shall be computed as under: i.e. $VCn = VC_1 x (Pn / P1)$

where,

VC1represents the Variable Charge based on Biomass Price P1for FY 2010-11 as specified under Regulation 46 and shall be determined as under:

$$VC_1 = \frac{\text{Station Heat Rate (SHR)}}{\text{Gross Calorific Value (GCV)}} \times \frac{1}{(1 - \text{Aux Consum. Factor})} \times \frac{P1}{1000}$$

Chapter 6: Technology specific parameters for Non-fossil fuel based Cogeneration Projects

48. Technology Aspect

48.1 A project shall qualify as a non-fossil fuel based co-generation project, if it is in accordance with the eligibility criteria as specified under Regulation 4(4).

49. Applicability

49.1 The capital cost and performance norms as specified under Regulation 50 to Regulation 54 and Regulation 62 shall be applicable only for new non-fossil fuel based co-generation projects with effect from April 1, 2013.

49.2 The fuel related aspects specified under Regulation 55 to Regulation 61 shall be applicable for existing and new non-fossil fuel based co-generation projects with effect from April 1, 2013:

Provided that norms in respect of specific fuel consumption, Gross Calorific Value and Auxiliary Consumption factor for existing non-fossil fuel based co-generation projects shall be as stipulated under the respective RE tariff Order as referred under Regulation 3.2.

50. Capital Cost Indexation Mechanism

50.1 The indexed Capital Cost in case of Non-fossil fuel based Co-generation projects for fourth and fifth year of the Control Period (i.e. FY 2013-14 and FY 2014-15) shall be notified pursuant to notification of such indexed capital cost for Non-fossil fuel based Co-generation projects by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

Provided that for the purpose of above indexation, the normative capital cost for the non-fossil fuel based co-generation projects shall be considered as Rs.398.07 Lakh/MW for the first year of the Control Period (i.e. FY 2010-11).

51. Plant Load Factor

51.1 For the purpose of determining fixed charge, the plant load factor for non-fossil fuel based co-generation projects shall be computed on the basis of plant availability for number of operating days considering operations during crushing season and off-season as specified under clause (2) below and load factor of 92%.

51.2 The number of operating days shall be as follows:

Operating Days	Plant Load Factor (%)
180 days (crushing)+ 60 days (off-season) = 240 days operating days	60%

52. Auxiliary Consumption

52.1 The auxiliary power consumption factor shall be 8.5% for computation of tariff.

53. Station Heat Rate

53.1 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.

54. Calorific Value

54.1 The Gross Calorific Value for bagasse shall be considered as 2250 kcal/kg. For the use of biomass fuels other than bagasse, calorific value as specified under Regulation 45 shall be applicable.

55. Fuel Cost

55.1 The price of bagasse shall be 1832 Rs/MT during first three years of the Control Period (i.e., FY 2010-11, FY 2011-12 and FY 2012-13) and thereafter shall be linked to indexation formulae as outlined under Regulation 56.

55.2 For use of biomass other than bagasse in co-generation projects, the biomass prices as specified under Regulation 46 shall be applicable.

56. Fuel Price Indexation Mechanism

56.1 In case of (existing and new) non-fossil fuel based cogeneration projects, the following indexing mechanism for adjustment of fuel prices for each year of operation, from April 1, 2013, will be applicable for determination of applicable variable charge component of tariff.

The indexed Bagasse Fuel Price (Pn) in case of Non-fossil fuel based Co-generation projects for each year (n) of the Control Period shall be notified pursuant to notification of such indexed Bagasse Fuel Price norm as applicable for Non-fossil fuel based Co-generation projects within Maharashtra by Central Electricity Regulatory Commission in accordance with indexation mechanism stipulated under CERC RE Tariff Regulations.

Where,

P (n) = Price per ton of Bagasse for the nth year to be considered for tariff determination

56.2 Variable Charge for the nth year shall be computed as under:

i.e. VCn = VC1x (Pn / P1)

where,

VC1represents the Variable Charge based on bagasse Price P1 for FY 2010-11 as specified under Regulation 55 and shall be determined as under:

$$VC_1 = \frac{\text{Station Heat Rate (SHR)}}{\text{Gross Calorific Value (GCV)}} \times \frac{1}{(1 - \text{Aux Consum. Factor})} \times \frac{P1}{1000}$$

57. Fuel Mix and Co-generation Plant Capacity

57.1 The co-generation power plant may be designed to use different types of non-fossil fuels available within the vicinity of co-generation power project such as bagasse and crop residues, bio-gas, agro-industrial residues, forest residues, etc., and other biomass fuels as may be approved by MNRE.

57.2 The co-generation projects shall be sized in co-relation to the locally available non-fossil fuel.

57.3 The co-generation plant developer shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

58. Use of Fossil Fuel

58.1 The use of fossil fuels shall be limited to the extent of 15% of total fuel consumption on annual basis or as amended by MNRE from time to time.

59. Monitoring Mechanism for the use of fossil fuel and Cogeneration Efficiency

59.1 The project developer shall furnish a monthly fuel procurement statement and monthly fuel usage statement duly certified by Chartered Accountant to the beneficiary with whom power purchsase agreement has been made (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring the fossil and non-fossil fuel consumption) for each month, along with the monthly energy bill. The statement shall cover details such as –

a) Quantity of fuel (in tonnes) for each fuel type (bagasse/biomass fuels and fossil fuels) procured and consumed during the month for power generation purposes,
b) Cumulative quantity (in tonnes) of each fuel type procured and consumed till the end of that month during the year,
c) Actual (gross and net) energy generation (denominated in kWh) during the month,
d) Cumulative actual (gross and net) energy generation (denominated in kWh) until the end of that month during the year,
e) Opening fuel stock quantity (in tonnes),
f) Receipt of fuel quantity (in tonnes) at the power plant site, and
g) Closing fuel stock quantity (in tonnes) for each fuel type (biomass fuels and fossil fuels) available at the power plant site.

59.2 Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall render such non-fossil fuel based co-generation projects to be ineligble for preferential tariff determined as per these Regulations from the date of default and for duration of the default during such financial year when such default occurs. However, such defaulting Non-fossil fuel based Co-generation Project shall continue to sell power to concerned distribution licensee even during the period of default at a rate lower by Rs 0.50/kWh below the applicable preferential tariff determined as per these Regulations.

60. Measurement and Verification Protocol for Compliance Monitoring

60.1 An Energy Audit of the co-generation facility shall be conducted through Energy Auditor empanelled with State Nodal Agency (MEDA) during every crushing season (once a year). The dates of the audit should be intimated to the purchasing Licensees, who have the option to depute their representatives to participate in the Audit. The Licensee shall ensure scrutiny of such Audit reports to ensure compliance by the co-generation project.

60.2 The Audit shall be carried out during a period of steady load on the facility during the season.

60.3 In addition to any other, the following readings/stipulations shall be mandatory for such Audit:

a) Duration of Test – The duration shall be at least one hour of continuous operation.
b) Input fuel (e.g. Bagasse) flow – The total quantity of fuel supplied to a boiler for the duration of the test is to be measured (in case the continuous measurement of fuel inflow is not possible, an average figure of fuel intake/hour can be taken as the basis. To arrive at this average, the fuel weighment over a period of constant plant load operation – either on 8-hour shift or 24 hours, as the case may be – shall be considered). Mass flow rate of non-fossil fuel – bagasse i.e. (m b is to be then calculated in kg/hr).
c) A sample of input fuel (e.g. bagasse) is to be tested (certified laboratory test report to be included) for its Gross Calorific Value using a bomb calorimeter.
d) Temperatures and pressures are to be measured at the different steam consumption points say, 1,2,...n (T1, P1, T2, P2,....Tn, Pn etc.)
e) The steam flow rates at 1,2, ...n (m_1, m_2,....m_n) are to be measured with on line steam flow meters. The flow meters are to be calibrated before the Audit.
f) Electrical output – at generator terminals is to be recorded in kWh for the test period.
g) A schematic of the configuration showing the instrument locations shall be provided.

60.4 The Audit shall include computation of the boiler efficiency (based on direct or indirect method), the turbine isentropic efficiency and the auxiliary electricity consumption of the co-generation facility.

60.5 Before entering into EPA the distribution licensee shall ensure that, the manufacturer test certificates for boiler efficiency and the turbine characteristic curves (steam flow rate vs power output) are made available along with the DPR.

60.6 The co-generation project entity shall appoint, at its cost, an independent Auditor for the purpose of conducting Energy Audit as above, from among a panel of such Auditors prepared by State Nodal Agency (MEDA).

60.7 The Audit results shall be reported to the Commission (in addition to the reporting requirements already stipulated in the Order) by the concerned licensee

61. Compliance Monitoring

61.1 MEDA shall be responsible for monitoring compliance of non-fossil fuel based co-generation projects with these Regulations.

61.2 MEDA shall maintain such data, including technical and commercial details of non-fossil fuel based co-generation projects in the State and shall make the data available in the public domain by publishing the same on its website with quarterly updation.

61.3 The project developer shall submit the information to MEDA as required under Regulation 59 in the format as specified in schedule templates-1.1, 1.2, 2.1 and 2.2.

61.4 The Commission shall reimburse to MEDA the reasonable expenses incurred in connection with the compliance monitoring activities in respect of non-fossil fuel based co-generation projects.

61.5 In addition to the above monotring mechanism, the developer shall also submit on an annual basis, such necessary financial Statements or documents as stipulated from time to time to enable the Commission to ascertain that the financial returns to the developers are in accordance with the regulated returns specified under these Regulations.

62. Operation and Maintenance Expenses

62.1 Normative O&M expenses during first year of the Control Period (i.e., FY 2010-11) shall be Rs. 14.11 Lakh per MW.

62.2 Normative O&M expenses allowed at the commencement of the Control Period (i.e. FY 2010-11) under these Regulations shall be escalated at the rate of 5.72% per annum.

63. Tariff for Non-fossil fuel based Non-Qualifying Co-generation Projects

63.1 The Tariff for Non-fossil fuel based non-qualifying co-generation projects shall be linked to average power purchase cost of host utility (excluding procurement from renewable energy sources) where such co-generation plant is situated, as approved by the Commission for that year.

63.2 The average power purchase cost excluding procurement from renewable energy sources as approved by the Commission for each year of Control Period shall be applicable for the purpose of billing during the year.

Chapter 7: Technology specific parameters for Solar PV Power Project

64. Technology Aspects

64.1 Norms for Solar Photovoltaic (PV) power under these Regulations shall be applicable for grid connected PV systems with installed capacity more than 3 MW that uses

sunlight for direct conversion into electricity through Photo Voltaic technology as may be approved by MNRE.

65. Capital Cost

65.1 The normative capital cost for setting up Solar Photovoltaic Power Project shall be Rs. 1690 Lakh/MW for FY 2010-11.

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

66. Capacity Utilisation Factor

66.1 The Capacity utilisation 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 Regulation 8.

67. Operation and Maintenance Expenses

67.1 The O&M Expenses shall be Rs.9.51 Lakhs/MW for the 1st year of operation.

67.2 Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum.

68. Tariff for Solar rooftop PV and Other Small Solar Power

68.1 Tariff for Solar rooftop PV and other small solar power Projects, complying with eligibility criteria as may be specified by MNRE from time to time, shall be higher by Rs 0.50/kWh or such other higher amount as may be stipulated by Commission from time time, over and above the tariff applicable for Solar PV power projects as per norms outlined under Regulation 65, 66 and 67.

Provided that such tariff shall be applicable for solar generation including such solar generation used for captive consumption, subject to compliance of related terms and conditions as may be specified by MNRE from time to time.

Chapter 8: Technology specific parameters for Solar Thermal Power Project

69. Technology Aspects

69.1 Norms for Solar thermal power under these Regulations shall be applicable for such Solar Thermal power projects that uses sunlight for direct conversion into electricity through Concentrated Solar Power technology based on either line focus or point focus principle. .

70. Capital Cost

70.1 The normative capital cost for setting up Solar Thermal Power Project shall be Rs.1530 Lakh/MW for FY 2010-11.

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.

71. Capacity Utilisation Factor

71.1 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.

72. Operation and Maintenance Expenses

72.1 The O&M Expenses shall be Rs 13.74 Lakhs/MW for 1st year operation.

72.2 Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 5.72% per annum.

73. Auxiliary Consumption

73.1 The auxiliary consumption factor 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 9: Miscellaneous

74. Deviation from norms

74.1 Tariff for sale of electricity by the generating company may also be determined in deviation from the norms specified in these Regulations subject to the conditions that the levellised tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levellised tariff calculated on the basis of the norms specified in these Regulations.

Provided that the reasons for deviation from the norms specified under these Regulations shall be recorded in writing.

75. Power to Relax

75.1 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.

76. Power to Amend

76.1 The Commission may, at anytime, vary, alter, modify or amend any provisions of these Regulations.

77. Power to remove difficulties

77.1 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.

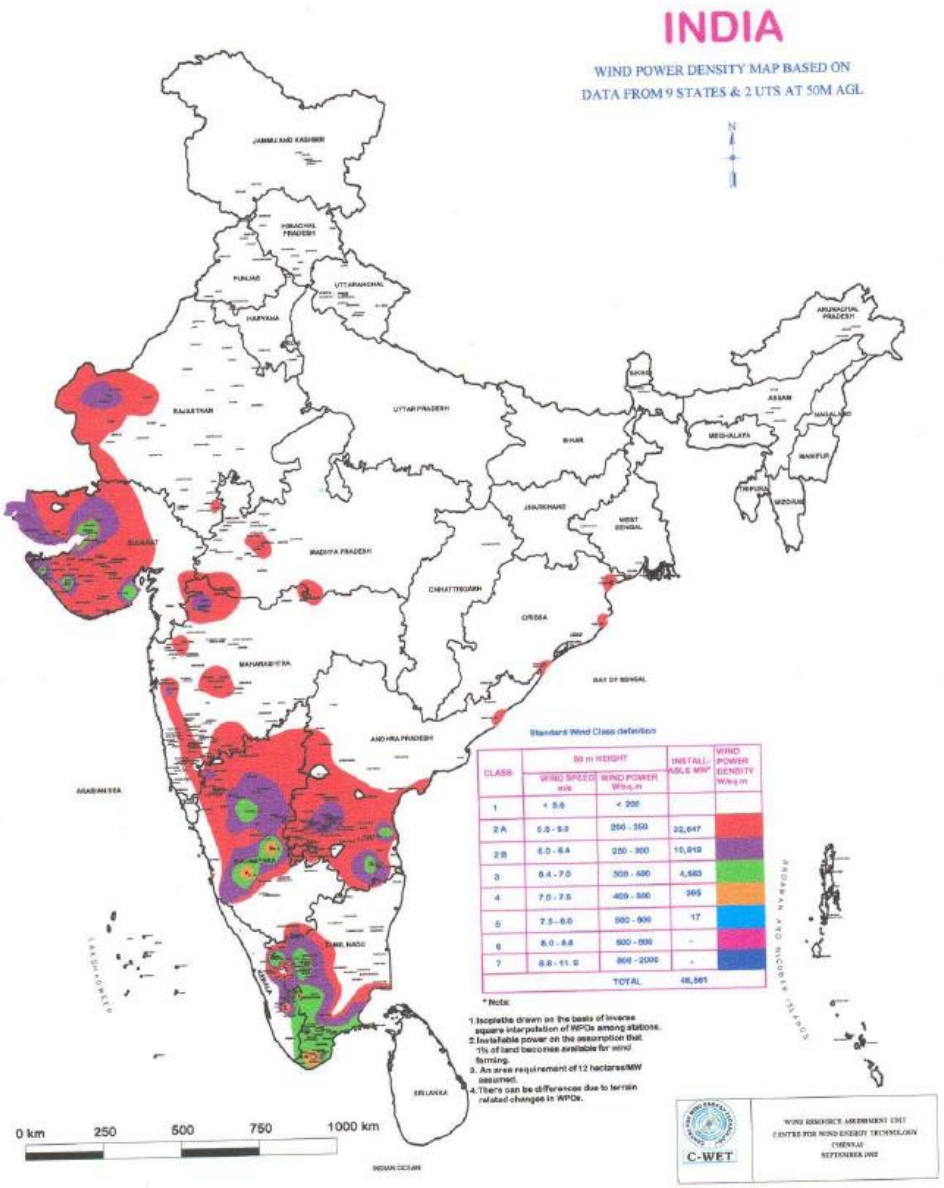
Mumbai

Dated: June 7, 2010

(K N Khawarey)

Secretary,
Maharashtra Electricity Regulatory Commission

Schedule : State-wise Wind Power Density Map



Form-1.1 Form Template for (Wind Power or Small Hydro Project or Solar PV/Solar thermal): Parameter Assumptions

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameter values
1	**Power Generation**				
		Capacity			
			Installed Power Generation Capacity	MW	
			Capacity Utilization Factor	%	
			Commercial Operation Date	mm/yyyy	
			Useful Life	Years	
2	**Project Cost**				
		Capital Cost/MW	Normative Capital Cost	Rs Lakh/MW	
			Capital Cost	Rs Lakh	
			Capital subsidy, if any	Rs Lakh	
			Net Capital Cost	Rs Lakh	
3	**Financial Assumptions**				
			Tariff Period	Years	
		Debt: Equity			
			Debt	%	
			Equity	%	
			Total Debt Amount	Rs Lacs	
			Total Equity Amout	Rs Lacs	
		Debt component			
			Loan Amount	Rs Lacs	
			Moratorium Period	years	
			Repayment Period(incld Moratorium)	years	
			Intrest Rate	%	
		Equity component			
			Equity amount	Rs Lacs	
			Return on Equity for first 10 years	% p.a	
			Return on Equity 11th year onwards	% p.a	
			Discount Rate	%	
		Depreciation			
			Depreciation Rate for first 12 years	%	
			Depreciation Rate 13th year onwards	%	
		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		Months	
		Maintenance Spare	(% of O&M exepenses)	%	
		Receivables		Months	
		Interest on Working Capital		% p.a.	

Form 1.2- Form template for (Wind Power or Small Hydro Project or Solar PV/Solar thermal): Determination of Tariff Components

Units Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14
Installed Capacity	MW														
Net Generation	MU														

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14
O&M Expenses	Rs Lakh														
Depreciation	Rs Lakh														
Interest on term loan	Rs Lakh														
Interest on working Capital	Rs Lakh														
Return on Equity	Rs Lakh														
Total Fixed Cost	**Rs Lakh**														

Per Unit Tariff components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14
PU O&M Expenses	Rs/kWh														
PU Depreciation	Rs/kWh														
PU Interest on term loan	Rs/kWh														
PU Interest on working Capital	Rs/kWh														
PU Return on Equity	Rs/kWh														
PU Tariff Components	**Rs/kWh**														

Levellised Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14
Discount Factors															
Discounted Tariff components	Rs/kWh														
Levellised Tariff	**Rs/kWh**														

Form 2.1- Form Template for Biomass power or non-fossil fuel based Cogen: Parameter Assumptions

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameter values
1	**Power Generation**				
		Capacity			
			Installed Power Generation Capacity	MW	
			Auxiliary Consumption factor	%	
			PLF (during stabilisation upto 6 months)	%	
			PLF (during 1st yr after stabilisation)	%	
			PLF (2nd yr onwards)	%	
			Commercial Operation Date	mm/yyyy	
			Useful Life	Years	
2	**Project Cost**				
		Capital Cost/MW	Normative Capital Cost	Rs Lakh/MW	
			Capital Cost	Rs Lakh	
			Capital subsidy, if any	Rs Lakh	
			Net Capital Cost	Rs Lakh	
3	**Financial Assumptions**				
			Tariff Period	Years	
		Debt: Equity			
			Debt	%	
			Equity	%	
			Total Debt Amount	Rs Lacs	
			Total Equity Amout	Rs Lacs	
		Debt component			
			Loan Amount	Rs Lacs	
			Moratorium Period	years	
			Repayment Period(incld Moratorium)	years	
			Intrest Rate	%	
		Equity component			
			Equity amount	Rs Lacs	
			Return on Equity for first 10 years	% p.a	
			Return on Equity 11th year onwards	% p.a	
			Discount Rate	%	
		Depreciation			
			Depreciation Rate for first 12 years	%	
			Depreciation Rate 13th year onwards	%	
		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		Months	
		Maintenance Spare	(% of O&M exepenses)	%	
		Receivables		Months	
		Biomass stock		Months	
		Interest on Working Capital		% p.a.	
6	**Fuel related assumptions**				
		Station Heat Rate	during stabilisation	kcal/kWh	
			post stabilisation	kcal/kWh	
		Fuel types & mix	Biomass fuel type -1	%	
			Biomass fuel type -2	%	
			fossil Fuel (coal)	%	
			GCV of Biomass fuel type -1	kCal/kg	
			GCV of Biomass fuel type -2	kCal/kg	
			GCV of fossil Fuel (coal)	kCal/kg	
			Biomass Price (fuel type -1) : yr-1	Rs/MT	
			Biomass Price (fuel type -2) : yr-1	Rs/MT	
			Fossl fuel price (coal) : yr-1	Rs/MT	
			Fuel price escalation factor	% p.a.	

Form-2.2: Form Template for (Biomass Power or Non-fossil fuel based Cogen): Determination of Tariff Components

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

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

Tariff Components (Variable charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
Biomass fuel type-1	Rs Lakh													
Biomass fuel type-2	Rs Lakh													
Fossil fuel (coal)	Rs Lakh													
Sub-total (Fuel Costs)	**Rs Lakh**													
Fuel cost allocable to power	%													
Total Fuel Costs	**Rs Lakh**													

Per Unit Tariff components (fixed)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
PU O&M Expenses	Rs/kWh													
PU Depreciation	Rs/kWh													
PU Interest on term loan	Rs/kWh													
PU Interest on working Capital	Rs/kWh													
PU Return on Equity	Rs/kWh													
PU Tariff Components (Fixed)	**Rs/kWh**													
PU Tariff Components (Variable)	**Rs/kWh**													
PU Tariff Components (Total)	**Rs/kWh**													

Levellised Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
Discount Factors														
Discounted Tariff components (fixed)	Rs/kWh													
Discounted Tariff components (variable)	Rs/kWh													
Discounted Tariff components (total)	Rs/kWh													
Levellised Tariff (fixed)	**Rs/kWh**													
Levellised Tariff (variable)	**Rs/kWh**													
Levellised Tariff (total)	**Rs/kWh**													

Schedule – Format of Monthly Statements to be submitted by Biomass and Cogeneration project developers to MEDA

Monthly Update

Template 1.1: Monthly Fuel Usage Statement (1/2)

Name of the Project ***For FY :***

(Location, District) ***Statement Date:***

MEDA / Utility Ref.No. ***Project Code:***

Installed Capacity (MW)

Date of Commissioning

Sr. No.	Month	Biomass Fuel-1 consumption (in Tonnes)			Biomass Fuel-2 consumption (in Tonnes)			Biomass Fuel-3 consumption (in Tonnes)			Fossil Fuel (Coal) consumption (in Tonnes)			% Fossil Fuel Consumption of Total Fuel Consumption (%)	
		Type of fuel	During current month	Cumu-lative last 12 month	Type of fuel	During current month	Cumu-lative last 12 month	Type of fuel	During current month	Cumu-lative last 12 month	Grade of coal used	During current month	Cumu-lative last 12 month	During current month (13) / (4+7+10+13)	Cumu-lative last 12 month (14) / (5+8+11+14)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	April														
2	May														
3	June														
4	July														
5	August														
6	September														
7	October														
8	November														
9	December														
10	January														
11	February														
12	March														

Monthly Update

Template 1.2: Monthly Fuel Usage Statement (2/2)

Name of the Project ***For FY :***

(Location, District) ***Statement Date:***

MEDA / Utility Ref.No. ***Project Code:***

Installed Capacity (MW)

Date of Commissioning

Sr. No.	Month	Energy Generation (kWH) during month		Cumulative Energy Generation (kWH) during FY till end of month		Biomass Fuel-1 consumption (in Tonnes)			Biomass Fuel-2 consumption (in Tonnes)			Biomass Fuel-3 consumption (in Tonnes)			Fossile Fuel-3 consumption (in Tonnes)		
		Gross	Net	Gross	Net	Opening Stock	Received at power plant site	Closing Stock	Opening Stock	Received at power plant site	Closing Stock	Opening Stock	Received at power plant site	Closing Stock	Opening Stock	Received at power plant	Closing Stock
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	April																
2	May																
3	June																
4	July																
5	August																
6	September																
7	October																
8	November																
9	December																
10	January																
11	February																
12	March																

Monthly Update

Template 2.1: Monthly Fuel Procurement Statement (1/2)

Name of the Project ***For FY :***

(Location, District) ***Statement Date:***

MEDA / Utility Ref.No. ***Project Code:***

Installed Capacity (MW)

Date of Commissioning

Sr. No.	Month	Quantity of Fuel Procured (in tonnes)				Total Delivered cost of Fuel (in Rs Lakh)			
		Biomass Fuel -1	Biomass Fuel -2	Biomass Fuel -3	Fossile Fuel -4	Biomass Fuel -1	Biomass Fuel -2	Biomass Fuel -3	Fossile Fuel -4
1	2	3	4	5	6	7	8	9	10
1	April								
2	May								
3	June								
4	July								
5	August								
6	September								
7	October								
8	November								
9	December								
10	January								
11	February								
12	March								

Monthly Update

Template 2.2: Monthly Fuel Procurement Statement (2/2)

Name of the Project
(Location, District)
MEDA / Utility Ref.No.
Installed Capacity (MW)
Date of Commissioning

For FY :
Statement Date:
Project Code:

Sr. No.	Month	Biomass Fuel-1 Procured					Biomass Fuel-2 Procured					Biomass Fuel-3 Procured					Fossile Fuel (Coal) Procured				
		Cost to supplier in (Rs./Ton)	Storage cost in (Rs./Ton)	Handling cost in (Rs./Ton)	Transportation cost in (Rs./Ton)	Delivered cost of fuel in (Rs./Ton)	Cost to supplier in (Rs./Ton)	Storage cost in (Rs./Ton)	Handling cost in (Rs./Ton)	Transportation cost in (Rs./Ton)	Delivered cost of fuel in (Rs./Ton)	Cost to supplier in (Rs./Ton)	Storage cost in (Rs./Ton)	Handling cost in (Rs./Ton)	Transportation cost in (Rs./Ton)	Delivered cost of fuel in (Rs./Ton)	Cost to supplier in (Rs./Ton)	Storage cost in (Rs./Ton)	Handling cost in (Rs./Ton)	Transportation cost in (Rs./Ton)	Delivered cost of Coal in (Rs./Ton)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1	April																				
2	May																				
3	June																				
4	July																				
5	August																				
6	September																				
7	October																				
8	November																				
9	December																				
10	January																				
11	February																				
12	March																				