

HARYANA GOVERNMENT

HARYANA ELECTRICITY REGULATORY COMMISSION

**Notification**

The \*\*\*\*\*, 2010

**Regulation No. HERC/ / 2010:** - In exercise of the powers conferred on it by section 181 of the Electricity Act 2003 (Act 36 of 2003) and all other powers enabling it in this behalf, the Haryana Electricity Regulatory Commission, proposes to frame the following regulations:-

**CHAPTER – 1**

**GENERAL**

**1. Short title, commencement, extent of application and interpretation.** – (1) These Regulations may be called the Haryana Electricity Regulatory Commission (Terms and Conditions for determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2010.

(2) These regulations shall come into force on the date of their publication in the Haryana Government Gazette.

(3) These regulations shall extend to all the renewable energy project developers and obligated entities in the State of Haryana.

(4) The Punjab General Clauses Act 1898 (Act I of 1898) as applicable to the State of Haryana shall apply qua the interpretation of these regulations.

**2. Definitions.** - (1) In these regulations, unless the context otherwise requires,-

(1) '**Act**' means the Electricity Act, 2003 (36 of 2003);

(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 equipments of the generating station, and transformer losses within the generating station, expressed as a percentage of gross energy generated at the generator terminal 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, deoiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds; and the wood waste produced in some industrial operations;

(4) **'Capital cost'** means the capital cost as defined in the relevant regulations 11,23,27,33,46,56 and 60;

(5) **'Central Agency'** means the agency operating the National Load Dispatch Centre or such other agency as the Central Commission may designate from time to time

(6) **"Certificate"** means the renewable energy certificate issued by the Central Agency in accordance with the procedures prescribed by it and under the provisions specified in the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2009;

(7) **'Commission'** means the Haryana Electricity Regulatory Commission;

(8) **'Conduct of Business Regulations'** means the Haryana Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 as amended from time to time;

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

(10) **'Floor Price'** means the minimum price determined by the Commission in accordance with these regulations at and above which the renewable energy certificate can be traded in the power exchange;

(11) **'Forbearance price'** means the ceiling price as determined by the Central Commission in accordance with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issue of Renewable energy Certificate for Renewable Energy Generation) Regulations, 2009, as amended from time to time, within which only the Certificate can be dealt in power exchange;

(12) **'Gross calorific value'** or 'GCV' in relation to a fuel used in 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;

(13) **'Gross station heat rate'** or 'GHR' means the heat energy input in kCal / kWh required to generate one kWh of electrical energy at generator terminals of a thermal generating station;

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

(15) **‘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);

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

a) 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;

b) in relation to small hydro power, biomass power and non fossil fuel based cogeneration power projects and Solar Thermal Power Projects the, inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

(17) **‘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;

(18) **‘MNRE’** means the Ministry of New and Renewable Energy of the Government of India;

(19) **‘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 including Bagasse provided the project may qualify to be a co-generation project if it fulfills the eligibility criteria as specified in clause (d) of Regulation 3;

(20) **‘Obligated entity’** means the distribution licensee, consumer owning the captive power plants and open access consumer in the state of Haryana, which is mandated to fulfill renewable purchase obligation under these Regulations;

(21) **‘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;

(22) **“Power Exchange”** means any exchange operating as the power exchange for electricity in terms of the orders issued by the Central Commission;

(23) **‘Preferential tariff’** means the tariff fixed by the Appropriate Commission for sale of energy from a generating station based on renewable energy sources to a distribution licensee;

(24) **‘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;

(25) **‘Renewable Energy’** means the grid quality electricity generated from renewable energy sources;

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

(27) **‘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;

(28) **‘Small Hydro’** means Hydro Power projects with a station capacity up to 25 MW;

(29) **‘Solar PV power’** means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic Cells.

(30) **‘Solar Thermal power’** means the Solar Thermal power project that uses sunlight for conversion of heat energy into electricity through Concentrated Solar Power technology based on either line focus or point focus principle.

(31) **‘State agency’** means the agency in the State of Haryana to be designated by the Commission to act as the agency for accreditation and recommending the renewable energy projects for registration and to undertake functions under these regulations;

(32) **‘Tariff period’** means the period for which tariff / price for sale of power is determined by the Commission on the basis of norms specified in these Regulations;

(33) **‘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 cogeneration 20 years
- (c) Small Hydro Plant 35 years
- (d) Solar PV/Solar thermal power plants 25 years

(31) **‘Year’** means a financial year.

(2) All other expressions used herein but not specifically defined herein but defined in the Act shall have the meaning assigned to them in the Act. The other expressions used herein but not specifically defined in the regulations or in the Act but defined under Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or the Haryana Electricity Regulatory Commission (Terms and conditions for determination of Generation Tariff) Regulations, 2008 shall have the meanings assigned to them respectively in the Haryana Electricity Reform Act, 1997 (Act 10 of 1998) or the Indian Electricity Grid Code or the Haryana Grid Code or the Haryana Electricity Regulatory Commission (Terms and conditions for determination of Generation Tariff) Regulations, 2008 as amended from time to time, provided that such definitions in the Haryana Electricity Reform Act, 1997 are not inconsistent with the provisions of the Electricity Act, 2003;

**3. Eligibility Criteria.** – For the purpose of these regulations a project shall be treated as renewable energy power project only if it meets the following criteria:

- (a) **Wind power project** – located at the wind sites having minimum annual mean Wind Power Density (WPD) of 200 Watt/m<sup>2</sup> measured at hub height of 50 meters and using new wind turbine generators.
- (b) **Small hydro project** – located at the sites approved by State Nodal Agency / State Government / self identified sites using new plant and machinery, and installed power plant capacity to be lower than or equal to 25 MW at single location.
- (c) **Biomass power project** – Biomass power projects using new plant and machinery using biomass fuel sources, provided use of fossil fuel is restricted only to 15% of total fuel consumption on annual basis.

(d) **Non-fossil fuel based co-generation project:** The project 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:

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

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

*Explanation.- For the purposes of this clause,*

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

(ii) ‘Useful Thermal Output’ is the useful heat (steam) that is provided to the process by the cogeneration facility.

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

(e) **Solar PV and Solar Thermal Power Projects** – Based on Technologies approved by MNRE / HAREDA.

## Chapter 2

### Norms

**4. Control Period or Review Period.** - The first Control Period or Review Period under these Regulations shall be of three years, of which the first year shall be the period from the date of notification of these regulations to 31<sup>st</sup> march, 2011.

Provided that the benchmark capital cost for Solar PV and Solar thermal projects may be reviewed annually by the Commission.

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 entire duration of the Tariff Period as specified in Regulation 5 below.

Provided also that the revision in Regulations for next Control Period shall be undertaken at least six months prior to the end of the first Control Period and in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations subject to adjustments as per revised Regulations.

**5. Tariff Period.** - (1) The Tariff Period for Renewable Energy power projects shall generally correspond to their respective project life or reckoned with the period provided in the PPA as the case may be.

(2) Tariff period under these Regulations shall be considered from the date of commercial operation of the renewable energy generating stations.

(3) 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 5(1).

(4) The PPA (s) signed by the distribution licensee (s) on the basis of tariff determined by the Commission in its orders dated 15<sup>th</sup> May, 2007 and 6<sup>th</sup> November, 2009 on renewable energy before the notification of these regulations shall remain valid for the tariff period as per the PPA. Such cases shall not be reopened in view of the norms provided in these regulations. However, after notification of these regulations, the aforesaid orders of the Commission shall not remain effective.

**6. Project Specific tariff.** - (1) Project specific tariff, on case to case basis, shall be determined by the Commission for the following types of projects:

(a) Municipal Solid Waste Projects

(b) Poultry litter

(c) Mixed feed

(d) Any other new renewable energy technologies approved by MNRE

(e) The renewable energy projects which have been commissioned before the notification of these Regulations but for which no power purchase agreement has been signed until the date of notification of these Regulations.

(f) 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 shall be guided by the provisions of Chapters 8 of these Regulations.

(g) Hybrid Solar Thermal Power plants

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

(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-3 of these Regulations, except for capital cost, shall be ceiling norms while determining the project specific tariff.

**7. Petition and proceedings for determination of tariff.** - (1) The Commission shall determine the generic tariff on the basis of suo-motu petition at least six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations.

(2) Notwithstanding anything contained in these regulations, a) the generic 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 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.

(3) 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.

(4) The proceedings for determination of tariff shall be in accordance with the HERC (Conduct of Business) Regulations 2004.

**8. Tariff Structure .** - (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 including margin money;

(e) Operation and maintenance expenses;

Provided that for renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration,

single part tariff with two components, fixed cost component and fuel cost component, shall be determined. The fuel cost component may be subjected to escalation factor.

**9. Tariff Design.** - (1) The generic tariff shall be determined on levelled basis for the Tariff Period.

Provided that for renewable energy technologies having single part tariff with two components, tariff shall be determined on levelled 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.

(2) For the purpose of levelled tariff computation, the discount factor equivalent to weighted average cost of capital or by other appropriate discounting factor shall be considered.

(3) Levelled tariff shall be specified for the period equivalent to the 'Tariff Period'.

#### **10. Despatch principles for electricity generated from Renewable Energy**

**Sources.** - (1) All renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above, and non-fossil fuel based cogeneration plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

(2) The biomass power generating station with an installed capacity of 10 MW and above and non-fossil fuel based co-generation projects shall be subjected to scheduling and despatch code as specified under Haryana Grid Code (HGC) and other relevant regulations including amendments thereto.

## Chapter 3

### Financial Principles

11. **Capital Cost.** - 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, initial spares, 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 7.

12. **Debt Equity Ratio.** - (1) For generic tariff to be determined based on suo motu petition, the debt equity ratio shall be 70 : 30.

(2) For Project specific tariff, 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 designated in Indian rupees on the date of each investment.

13. **Loan and Finance Charges.** - (1) For the purpose of determination of tariff, loan tenure of 10 years shall be considered.

(2) (a) The loans arrived at in the manner indicated above shall be considered as gross normative loan for calculation for 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.

(b) For the purpose of computation of tariff, the normative interest rate shall be considered as average long term prime lending rate (LTPLR) / Base Rate of State Bank of India (SBI) prevalent during the previous year.

(c) 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.

14. **Depreciation.** - (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.

(2) Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan tenure and period beyond loan tenure over useful life computed on 'Straight Line Method'. 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.

(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.

15. **Return on Equity.** - (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

(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 years onwards.

16. **Interest on Working Capital.** - (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 CUF;

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

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

a) Fuel costs for four months at normative 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.

(3) Interest on Working Capital shall be at interest rate equivalent to average State Bank of India short term PLR / Base Rate during the previous year.

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

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

(3) Normative O&M expenses allowed during first year of the Control Period under these Regulations shall be escalated at the rate of 4% per annum over the Tariff Period.

**18. Rebate.** - (1) For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.

(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.

**19. Late payment surcharge.** - In case the payment of any bill for charges payable under these regulations is delayed beyond a period of 60 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.

**20. Sharing of CDM Benefits.** - (1) The proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely:

a) 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;

b) In the second year, the share of the beneficiaries 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 beneficiaries.

**21. Subsidy or incentive by the Central / State Government.** - 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.

Per unit benefit shall be derived on levelled basis at discount factor equivalent to weighted average cost of capital or any other appropriate discounting factor considered by the Commission.

**22. Taxes and Duties.** - Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government. Any tax on generation shall be allowed as pass through on actual incurred basis subject to production of documentary evidence by the generating company.

## Chapter 4

### Technology specific parameters for Wind Energy

23. **Capital Cost.** - (1) The capital cost for wind energy project 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 IDC.

(2) The capital cost for wind energy projects shall be Rs.5.15 Crores/MW (FY 2010- 11 during first year of Control Period) and shall be linked to indexation formula as outlined under Regulation 24.

24. **Capital Cost Indexation Mechanism.** - (1) The following indexation mechanism shall be applicable in case of wind energy projects for adjustments in capital cost over the Control Period with the changes in Wholesale Price Index for Steel and Electrical Machinery.

$$CC(n) = P\&M(n) * (1+F1+F2+F3)$$

$$P\&M(n) = P\&M(0) * (1+d(n))$$

$$d(n) = [a * \{(SI(n-1)/SI(0)) - 1\} + b * \{(EI(n-1)/EI(0)) - 1\}] / (a+b)$$

Where,

CC (n) = Capital Cost for nth year

P&M (n) = Plant and Machinery Cost for nth year

P&M (0) = Plant and Machinery Cost for the base year

Note. P&M (0) is to be computed by dividing the base capital cost (for the first year of the control period) by (1+F1+F2+F3) i.e. Rs. 5.15 Crores per MW / 1.25 =

Rs 4.12 Crores per MW.

d (n) = Capital Cost escalation factor for year (n) of Control Period

SI (n-1) = Average WPI Steel Index prevalent for calendar year (n-1) of the Control Period

SI (0) = Average WPI Steel Index prevalent for calendar year (0) at the beginning of the Control Period i.e. January 2009 to December 2009.

EI (n-1) = Average WPI Electrical Machinery Index prevalent for calendar year (n- 1) of the Control Period

EI (0) = Average WPI Electrical and Machinery Index prevalent for calendar year (0) at the beginning of the Control Period i.e. January 2008 to December 2008

a = Constant to be determined by Commission from time to time, (In default it is 0.6), for weightage to Steel Index

b = Constant to be determined by Commission from time to time, (In default it is 0.4), for weightage to Electrical Machinery Index

F1 = Factor for Land and Civil Works (0.08)

F2 = Factor for Erection and Commissioning (0.07)

F3 = Factor for IDC and Financing Cost (0.10)

**25. Capacity Utilisation Factor.** - (1) CUF norms for this control period shall be as follows:

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

(2) The annual mean wind power density specified in sub-regulation (1) above shall be measured at 50 meter hub-height.

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

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

**26. Operation and Maintenance Expenses.** - (1) Normative O&M expenses for the first year of the Control Period (i.e. FY 2010- 11) shall be Rs 6.50 Lakh per MW.



(2) Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 4% per annum over the tariff period to compute the levelled tariff.

## Chapter 5

### Technology specific parameters for Small Hydro Project

27. **Capital Cost.** - (1) The normative capital cost for small hydro projects during first year of Control Period (FY 2010-11) shall be as follows:

Size of project	Capital Cost (Rs. In Crores)
Below 5 MW	5.50
5 MW to 25 MW	5.00

(2) The capital cost for subsequent years shall be determined on the basis of indexation formula as outlined under Regulation 28.

28. **Capital Cost Indexation Mechanism.** - (1) Same indexation mechanism shall be applicable in case of small hydro power projects for adjustments in capital cost over the Control Period with the changes in Wholesale Price Index for Steel and Electrical Machinery as specified in regulation 24 except the value of  $1+F1+F2+F3$ , which shall be 1.40 as per following details:

F1 = Factor for Land and Civil Work (0.16)

F2 = Factor for Erection and Commissioning (0.10)

F3 = Factor for IDC and Financing Cost (0.14)

29. **Capacity Utilisation Factor.** - Capacity Utilisation factor for the small hydro projects shall be 56%. The normative CUF shall be net of free power to the State, if any, and any quantum of free power if committed by the developer over and above the normative CUF shall not be factored into the tariff.

30. **Auxiliary Consumption.** - Normative Auxiliary Consumption for the small hydro projects shall be 1.0%.

31. **Operation and Maintenance Expenses.** - (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 Expenses (Rs. In Lakhs)
Below 5 MW	17
5 MW to 25 MW	12

(2) Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 4% per annum for the Tariff Period for the purpose of determination of levelled tariff.

## Chapter 6

### Technology specific parameters for Biomass based Power Projects

32. **Technology Aspect.** - The norms for tariff determination specified hereunder are for biomass power projects based on Rankine cycle technology application using water cooled condenser.

33. **Capital Cost.** - The normative capital cost for the biomass power projects shall be Rs. 4.50 Crores/MW (FY 2010-11 during first year of Control Period) and shall be linked to indexation formula as outlined under Regulation 34.

34. **Capital Cost Indexation Mechanism.** - Same indexation mechanism shall be applicable in case of small hydro power projects for adjustments in capital cost over the Control Period with the changes in Wholesale Price Index for Steel and Electrical Machinery as specified in regulation 24 except the value of  $1+F1+F2+F3$ , which shall be 1.33 as per following details:

F1 = Factor for Land and Civil Work (0.10)

F2 = Factor for Erection and Commissioning (0.09)

F3 = Factor for IDC and Financing Cost (0.14)

35. **Plant Load Factor.** - (1) Threshold Plant Load Factor for determining fixed charge component of Tariff shall be:

1. During Stabilisation: 60%

2. During the remaining period of the first year (after stabilization) : 70%

3. From 2nd Year onwards: 80 %

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

36. **Auxiliary Consumption.** - The auxiliary power consumption factor shall be 10% for the determination of tariff.

37. **Station Heat Rate.** - The Station Heat Rate for biomass power projects shall be 3800 kCal / kWh

**38. Operation and Maintenance Expenses.** - (1) Normative O&M expenses for the first year of the Control period (i.e. FY 2010- 11) shall be Rs. 20.25 Lakh per MW.

(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 4% per annum.

**39. Fuel Mix.** - (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.

(2) The Biomass Power Generating Companies shall ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

**40. Use of Fossil Fuel.** - The use of fossil fuels shall be limited to the extent of 15% of total fuel consumption on annual basis.

**41. Monitoring Mechanism for the use of fossil fuel.** - (1) The Project developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant to the beneficiary (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) consumed and procured during the month for power generation purposes,

b) Cumulative quantity (in tonnes) of each fuel type consumed and procured till the end of that month during the year,

c) Actual (gross and net) energy generation (denominated in units) during the month,

d) Cumulative actual (gross and net) energy generation (denominated in units) 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.

(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 based power project.

42. **Calorific Value.** - The Calorific Value of the biomass fuel used for the purpose of determination of tariff shall be 3458(kCal/kg).

43. **Fuel Cost.** - Biomass fuel price during first year of the Control Period shall be 1600 (Rs/MT) and shall be linked to indexation formulae as specified under Regulation 44. Alternatively, for each subsequent year of the Tariff Period, the normative escalation factor of 5% per annum shall be applicable at the option of the biomass project developer.

44. **Fuel Price Indexation Mechanism.** - (1) In case of biomass power projects, the following indexing mechanism for adjustment of fuel prices for each year of operation will be applicable for determination of applicable variable charge component of tariff, in case developer wishes to opt for indexing mechanism:

$$P_{(n)} = P_{(n-1)} * \{a * (WPI_{(n)}/WPI_{(n-1)}) + b * (1+IRC)_{(n-1)} + c * (Pd_{(n)}/Pd_{(n-1)})\}$$

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)<sup>th</sup> year to be considered for tariff determination. P1 shall be Biomass price for FY 2010-11 as specified under Regulation 43.

a = Factor representing fuel handling cost

b = Factor representing fuel cost

c = Factor representing transportation cost

$IRC_{(n-1)}$  = Average Annual Inflation Rate for indexed energy charge component in case of captive coal mine source (in %) to be applicable for (n-1)<sup>th</sup> year, as may be specified by HERC for 'Payment purpose' as per Competitive Bidding Guidelines

$Pd_n$  = Weighted average price of HSD for nth year.

$Pd_{n-1}$  = Weighted average price of HSD for (n-1)<sup>th</sup> year.

$WPI_n$  = Whole sale price index for the month of April of n<sup>th</sup> year

$WPI_{n-1}$  = Wholesale price index for month of April of (n-1)<sup>th</sup> year.

Where a, b & c will be specified by the Commission from time to time. In default, these factors shall be 0.2, 0.6 & 0.2 respectively.

(2) Variable Charge for the n<sup>th</sup> year shall be determined as under:

$$VC_n = VC_1 \times (P_n / P_1) \text{ or } VC_n = VC_1 \times (1.05)^{(n-1)} \text{ (optional)}$$

where,

$VC_1$  represents the Variable Charge based on Biomass Price  $P_1$  for FY 2010-11 as specified under Regulation 43 and shall be determined as under:

$$VC_1 = \frac{\text{Station Heat Rate (SHR)}}{\text{Gross Calorific Value (GCV)}} \times \frac{1}{(1 - \text{Auxiliary Consumption Factor})} \times \frac{P_1}{1000}$$

## Chapter 7

### Technology specific parameters for Non-fossil fuel based Cogeneration Projects

45. **Technology Aspect.** - A project shall qualify as a non-fossil fuel based Cogeneration project, if it is in accordance with the eligibility criteria as specified under Regulation 3(d).

46. **Capital Cost.** - The normative capital cost for the non-fossil fuel based cogeneration projects shall be Rs. 4.45 Crores/MW for the first year of Control Period (i.e. FY 2010-11), and shall be linked to indexation formula as outlined under Regulation 47.

47. **Capital Cost Indexation Mechanism.** - Same indexation mechanism shall be applicable in case of small hydro power projects for adjustments in capital cost over the Control Period with the changes in Wholesale Price Index for Steel and Electrical Machinery as specified in regulation 24 except the value of  $1+F1+F2+F3$ , which shall be 1.33 as per following details:

F1 = Factor for Land and Civil Work (0.10)

F2 = Factor for Erection and Commissioning (0.09)

F3 = Factor for IDC and Financing Cost (0.14)

48. **Plant Load Factor.** - (1) For the purpose of determining fixed charge, the plant load factor for non-fossil fuel based cogeneration 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 sub regulation (2) below and load factor of 85%.

(2) The number of operating days for the State of Haryana shall be 150 days (crushing) + 60 days (off-season) = 210 days operating days and the Plant Load Factor shall be 53%.

49. **Auxiliary Consumption.** - The auxiliary power consumption factor shall be 8.5% for the computation of tariff.

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



51. **Calorific Value.** - 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 42 shall be applicable.

52. **Fuel Cost.** – (1) The price of Bagasse shall be 600(Rs/MT) and shall be linked to indexation formulae as outlined under Regulation 53. Alternatively, for each subsequent year of the Control Period, the normative escalation factor of 5% per annum shall be applicable at the option of the project developer.

(2) For use of biomass other than bagasse in co-generation projects, the biomass prices as specified under Regulation 44 shall be applicable.

53. **Fuel Price Indexation Mechanism.** - (1) In case of non-fossil fuel based cogeneration projects, the same indexing mechanism for adjustment of fuel prices for each year of operation will be applicable for determination of applicable variable charge component of tariff as specified under regulation 44 above except that the price per tonne shall be as per regulations 52 above, in case developer wishes to opt for indexing mechanism:

54. **Operation and Maintenance Expenses.** (1) Normative O&M expenses during first year of the Control Period shall be Rs. 13.35 Lakh per MW.

(2) Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 4% per annum.

## Chapter 8

### Technology specific parameters for Solar PV Power Project

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

56. **Capital Cost.** - The normative capital cost for setting up Solar Photovoltaic Power Project shall be Rs. 17.00 Crores/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 6 and regulation 7.

57. **Capacity Utilisation Factor.** - 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 6 and regulation 7.

58. **Operation and Maintenance Expenses.** - (1) The O&M Expenses shall be Rs.9 Lakhs/MW for the 1st year of operation.

(2) Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 4% per annum.

## Chapter 9

### Technology specific parameters for Solar Thermal Power Project

59. **Technology Aspects.** - Norms for Solar thermal power 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 uses 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.

60. **Capital Cost.** - The normative capital cost for setting up Solar Thermal Power Project shall be Rs.13.00 Crores/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 6 and regulation 7.

61. **Capacity Utilisation Factor.** - The Capacity utilisation factor shall be 23%.

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 6 and Regulation 7.

63. **Operation and Maintenance Expenses.** - The O&M Expenses shall be Rs 13 Lakhs/MW for 1st year operation.

(2) Normative O&M expenses allowed at the commencement of the Control Period under these Regulations shall be escalated at the rate of 4% per annum.

63. **Auxiliary Consumption.** - 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 6 and Regulation 7.

## Chapter – 10

### **Renewable purchase obligation (RPO) and Renewable Energy Certificate (REC)**

**64. Renewable Purchase Obligation.** – (1) Every obligated entity including distribution licensee, consumers owning captive power plant and long term open access consumers in Haryana shall purchase from renewable energy sources under the Renewable Purchase Obligation (RPO) not less than 1.5% of its consumption of energy during each of the FYs 2010-11 and 2011-12, 2% for the FYs 2012-13 and 2013-14 and 2.5% for the FY 2014-15.

(2) Solar RPO shall be 0.25% of the overall RPO as specified under sub regulation (1) above with an annual increase of 0.25% i.e. 3% for the FY 2022.

Provided that solar renewable purchase obligation so specified shall be procured from generation based on solar as renewable energy source only subject to availability of the solar power in the State of Haryana.

Provided further, such obligation to purchase renewable energy shall be inclusive of the purchases, if any, from renewable energy sources already being made by concerned obligated entity.

Provided also that the power purchases under the power purchase agreements for the purchase of renewable energy sources already entered into by the distribution licensees and consented to by the Commission shall continue to be made till validity of the Power Purchase Agreement approved by the Commission, even if the total purchases under such agreements exceed the RPO as specified in these regulations.

**65. Certificates under the Regulations of the Central Commission.** - (1) Subject to the terms and conditions contained in these regulations the Certificates issued under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 shall be the valid instruments for the discharge of the mandatory obligations set out in these regulations for the obligated entities to purchase electricity from renewable energy sources.

Provided that in the event of the obligated entity fulfilling the renewable purchase obligation by purchase of certificates, the obligation to purchase electricity from generation based on solar as renewable energy source can be fulfilled by purchase of solar certificates only, and the obligation to

purchase electricity from generation based on renewable energy other than solar can be fulfilled by purchase of non-solar certificates.

(2) Subject to such direction as the Commission may give from time to time, the obligated entity shall act in consistent with the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 notified by the Central Commission in regard to the procurement of the certificates for fulfillment of the Renewable Purchase Obligation under these regulations.

(3) The Certificates purchased by the obligated entities from the power exchange in terms of the regulation of the Central Commission mentioned in sub regulation (1) of this Regulation shall be deposited by the obligated entities to the Commission in accordance with the detailed procedure issued by the Central Agency.

**66. State Agency.** - (1) The Commission designate Haryana Renewable Energy Development Agency (HAREDA) as the State Agency for accreditation and recommending the renewable energy projects for registration and to undertake functions under these regulations.

(2) The State Agency shall function in accordance with the directions issued by the Commission and shall act in consistent with the procedures rules laid by Central Agency for discharge of its functions under the Central Electricity Regulatory Commission (Terms and Conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010.

(3) The State Agency shall submit quarterly status to the Commission in respect of compliance of renewable purchase obligation by the obligated entities in the format as stipulated by the Commission and may suggest appropriate action to the Commission if required for compliance of the renewable purchase obligation.

(4) The Commission may from time to time fix the remuneration and charges payable to the State Agency for discharge of its functions under these regulations.

(5) If the Commission is satisfied that the State Agency is not able to discharge its functions satisfactorily, it may by general or special order, and by recording reasons in writing, designate any other agency to function as State Agency as it considers appropriate.

**67. Effect of default.** - (1) If the obligated entities do not fulfill the renewable purchase obligation as provided in these regulations during any year and also does not purchase the certificates, the Commission may direct the obligated entity to deposit into a separate fund, to be created and maintained by such obligated entity, such amount as the Commission may determine on the basis of the shortfall in the RPO determined under these regulations from time to time at the forbearance price decided by the Central Commission.

Provided that the fund so created shall be utilised, as may be directed by the Commission, for purchase of the renewable energy certificates.

Provided further that the Commission may empower an officer of the State Agency to procure from the Power Exchange the required number of certificates to the extent of the shortfall in the fulfillment of the obligations, out of the amount in the fund.

Provided also that the distribution licensee shall be in breach of its licence condition if it fails to deposit the amount directed by the Commission within 30 days of the communication of the direction or within such period as directed by the Commission.

(2) Where any obligated entity fails to comply with the obligation to purchase the required percentage of power from renewable energy sources or the renewable energy certificates, it shall also be liable for penalty as may be decided by the Commission under section 142 of the Act.

Provided that in case of genuine difficulty in complying with the renewable purchase obligation because limited availability of renewable energy or non-availability of certificates, the obligated entity can approach the Commission for relaxation or carry forward of compliance requirement to the next year.

Provided further that where the Commission has consented in writing on an application made by the obligated entity to the carry forward of compliance requirement, the provision of regulation (1) of this regulation or the provision of section 142 of the Act shall not be invoked.

## Chapter – 11

### Miscellaneous

64. **Deviation from norms.** - 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 levelled tariff over the useful life of the project on the basis of the norms in deviation does not exceed the average lifetime levelled generating cost 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.

65. **Power to Relax.** - The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may suo moto relax any of the provisions of these regulations or on an application made before it by an interested person.

66. **Issue of orders or directions.** – Subject to the provisions of the Act and these regulations, the Commission may, from time to time, issue orders and procedural directions with regard to the implementation of these regulations and specify the procedure to be followed on various matters, which the Commission has been empowered by the regulations to direct and matters incidental thereto.

67. **Power to amend.** - The Commission may, at any time, add, vary, modify or amend any of the provisions of these regulations.

68. **Power to remove difficulties.** - If any difficulty arises in giving effect to any of the provisions of these regulations, the Commission may, by general or special order, make such provisions, which in the opinion of the Commission are necessary or expedient to do so.

Rohtash Dahiya  
(Member)

Bhaskar Chatterjee  
(Chairman)

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

S.No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameter values
1	<b>Power Generation</b>	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Commercial Operation Date Useful Life	MW % mm/yyyy Years	
2	<b>Project Cost</b>	Capital Cost/MW	Normative Capital Cost Capital Cost Capital Subsidy, if any Net Capital Cost	Rs Lakh/MW Rs Lakh Rs Lakh Rs Lakh	
3	<b>Financial Assumptions</b>	Debt: Equity  Debt component  Equity component  Depreciation  Incentives	Tariff Period  Debt Equity Total Debt Amount Total Equity Amount  Loan Amount Moratorium Period Repayment Period (including Moratorium) Interest Rate  Equity Amount Return on equity for first 10 years Return on equity 11th year onwards Discount Rate  Depreciation Rate for first 12 years Depreciation Rate 13 <sup>th</sup> year onwards  Generation Based Incentives, if any Period for GBI	Years  % % Rs Lacs Rs Lacs  Rs Lacs years Years %  Rs Lacs % p.a. % p.a. %  % %  Rs L p.a. Years	
4	<b>Operation &amp; Maintenance</b>	Normative O&M expense O&M expense per annum Escalation factor for O&M expense		Rs Lakh/MW Rs Lakh %	
5	<b>Working Capital</b>	O&M expense Maintenance Spare Receivables Interest on Working Capital	(% of O&M expenses)	Months % Months % p.a.	



**Form-2.1: Form Template for (Biomass Power or Non-fossil fuel based Cogen): Parameter Assumptions**

Sr. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameter values
1	Power Generation	Capacity	Installed Power Generation Capacity Auxiliary Consumption factor PLF (during stabilisation upto 6 months) PLF (during 1st yr after stabilisation) PLF (2nd yr onwards) Commercial Operation Date Useful Life	MW % % % % mm/yyyy Years	
2	Project Cost	Capital Cost/MW	Normative Capital Cost Capital Cost Capital Subsidy, if any Net Capital Cost	Rs.Lakh/MW Rs Lakh Rs Lakh Rs Lakh	
3	Financial Assumptions	Debt: Equity  Debt Component  Equity Component  Depreciation  Incentives	Tariff Period  Debt Equity Total Debt Amount Total Equity Amount  Loan Amount Moratorium Period Repayment Period (including Moratorium) Interest Rate  Equity amount Return on Equity for first 10 years Return on Equity 11th year onwards Discount Rate  Depreciation Rate for first 12 years Depreciation Rate 13th year onwards Generation Based Incentives, if any Period for GBI	Years  % % Rs Lacs Rs Lacs  Rs Lacs years years %  Rs Lacs % p.a. % p.a. %  % % % Rs L p.a. Years	
4	Operation & Maintenance		Normative O&M expense O&M expense per annum Escalation factor for O&M expense	Rs Lakh/MW Rs Lakh %	
5	Working Capital	O&M expenses Maintenance	(% of O&M expenses)	Months %	

		Spare Receivables Biomass Stock Interest on Working Capital		Months Months % p.a.	
6	Fuel related assumptions	Station Heat Rate	during stabilisation post stabilisation	kcal/kWh kcal/kWh	
		Fuel types & mix	Biomass fuel type-1 Biomass fuel type-2 Fossil Fuel (coal)	% % %	
			GCV of Biomass fuel type-1 GCV of Biomass fuel type-2 GCV of fossil Fuel (coal)	kcal/Kg kCal/kg kCal/kg	
			Biomass Price (fuel type-1): yr-1 Biomass Price (fuel type-2): yr-1 Fossil Fuel price (coal): yr-1 Fuel price escalation factor	Rs/MT Rs/MT Rs/MT % p.a.	

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

<b>Unit Generation</b>	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	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24
Installed Capacity	MW																								
Net Generation	MU																								
<b>Tariff Components (Fixed charge)</b>	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	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24
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																								
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>																								
<b>Per Unit Tariff components</b>	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	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24
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																								
<b>PU Tariff Components</b>	<b>Rs/kWh</b>																								
<b>Levellers Tariff</b>	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	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24
Discount Factors																									
Discounted Tariff components	Rs/kWh																								
<b>Levellers Tariff</b>	<b>Rs/kWh</b>																								

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

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

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	
O&M Expenses	Rs Lakh																										
Depreciation	Rs Lakh																										
Interest on term loan	Rs Lakh																										
Interest on Working Capital	Rs Lakh																										
Return on Equity	Rs Lakh																										
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>																										

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	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	
Biomass fuel type-1	Rs Lakh																										
Biomass fuel type-2	Rs Lakh																										
Fossil fuel (coal)	Rs Lakh																										
<b>Sub-total (fuel Costs)</b>	<b>Rs Lakh</b>																										
Fuel Cost allocable to power	%																										
<b>Total Fuel Costs</b>	<b>Rs Lakh</b>																										

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	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	
PU O&M Expenses	Rs/kWh																										
PU Depreciation	Rs/kWh																										
PU Interest on term loan	Rs/kWh																										
PU Interest on working capital	Rs/kWh																										
PU Return on Equity	Rs/kWh																										
<b>PU Tariff Components (fixed)</b>	<b>Rs/kWh</b>																										
<b>PU Tariff Components (variable)</b>	<b>Rs/kWh</b>																										
<b>PU Tariff Components (total)</b>	<b>Rs/kWh</b>																										

<b>Levelling Tariff</b>	<b>Unit</b>	<b>Yr-1</b>	<b>Yr-2</b>	<b>Yr-3</b>	<b>Yr-4</b>	<b>Yr-5</b>	<b>Yr-6</b>	<b>Yr-7</b>	<b>Yr-8</b>	<b>Yr-9</b>	<b>Yr-10</b>	<b>Yr-11</b>	<b>Yr-12</b>	<b>Yr-13</b>	<b>Yr-14</b>	<b>Yr-15</b>	<b>Yr-16</b>	<b>Yr-17</b>	<b>Yr-18</b>	<b>Yr-19</b>	<b>Yr-20</b>	<b>Yr-21</b>	<b>Yr-22</b>	<b>Yr-23</b>	<b>Yr-24</b>	<b>Yr-25</b>
Discount Factors	Rs/kWh																									
Discounted Tariff components (fixed)	Rs/kWh																									
Discounted Tariff components (variable)	Rs/kWh																									
Discounted Tariff components (total)	Rs/kWh																									
<b>Levelling Tariff (fixed)</b>	<b>Rs/kWh</b>																									
<b>Levelling Tariff (variable)</b>	<b>Rs/kWh</b>																									
<b>Levelling Tariff (total)</b>	<b>Rs/kWh</b>																									

