Uttarakhand Electricity Regulatory Commission

Institution of Engineers (I) Building, 1st Floor, Near ISBT, Majra, Dehradun

Notification

15.04.2013

No. F-9(21)/RG/UERC/2013/102: In exercise of the powers conferred under section 61(h), 86(1)(e) read with section 181(zp) of the Electricity Act, 2003, and all other powers enabling it in this behalf, and after previous publication, the Uttarakhand Electricity Regulatory Commission hereby makes the following regulations, namely:

CHAPTER 1

PRELIMINARY

1. Short title and commencement

(1) These regulations may be called the Uttarakhand Electricity Regulatory Commission (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2013.

(2) These regulations shall come into force with effect from the date of notification, and unless reviewed earlier or extended by the Commission, shall remain in force for a period of 5 years from the date of commencement.

(3) With the coming into force of these Regulations, UERC (Tariff and Other Terms for Supply of Electricity from Non-conventional and Renewable Energy Sources) Regulations, 2010, shall stand repealed.

2. Scope and extent of application

(1) These regulations shall apply in all cases where supply of electricity is being made from Renewable Energy Sources and Non-fossil Fuel Based Co-generating Stations, commissioned after coming in effect of these Regulations, to the distribution licensees or local rural grids within the State of Uttarakhand.

Provided that in cases of wind, Small Hydro projects, Biomass power based on Rankine cycle, non-fossil fuel based cogeneration projects, Solar PV, Solar Thermal power projects, grid interactive roof top and small solar PV plants, Biomass gasifier and Biogas power

project these Regulations shall apply subject to the fulfillment of eligibility criteria specified in Regulation 4 of these Regulations.

Provided further that Regulations in Chapter 4 & 5, shall not be applicable for generating stations commissioned prior to coming into effect of these Regulations and their present tariffs shall continue to be applicable. However, provision of normative levelised tariff of 12 paise/unit, over and above the generic tariff, for solar thermal/PV generating stations as specified in Regulation 15(1)(b) shall also be applicable to such stations commissioned prior to coming into effect of these Regulations. Provisions other than those in Chapter 4 and 5 shall apply to other generating stations located in the State of Uttarakhand, which are based on Renewable Sources of Energy including non-fossil fuel based Co-generation and which transmit and/or supply electricity to any person other than the distribution licensee of the State utilizing State Transmission and/or Distribution System.

(2) The existing projects, who are at present supplying power to third party shall have the option to switch over to supply to the distribution licensee or the local rural grid at generic tariffs as was applicable at the time of commissioning of their project or seek determination of project specific tariff from the Commission. The option shall be for the balance life of the project and shall not be allowed to be changed once it is exercised.

(3) The generic tariff specified for Solar PV and Solar Thermal power projects under these Regulations shall be the maximum tariff and the distribution licensee shall invite bids from generators/developers for procurement of power from these generators/developers. The distribution licensee shall enter into a PPA with the generators/developers bidding lower tariff.

(4) The generating stations covered under these Regulations shall be deemed to be the generating station of a generating company and all functions, obligations & duties assigned to such generating company under the Electricity Act, 2003 shall apply to these generating stations.

3. Definitions

(1) Unless the context otherwise requires, the words used in these Regulations shall have the following meaning:

(a) "Act" means the Electricity Act 2003 (36 of 2003);

(b) "Auxiliary energy consumption" or 'AUX' in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station and transformer losses within the generating station, expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units of the generating station;

(c) "Banking" means the process under which a captive generating station supplies power to the grid not with the intention of selling it either to a third party or to a licensee, but with the intention of exercising his eligibility to draw back this power from the grid for its own use.

(d) "Biomass" means wastes produced during agricultural and forestry operations (for example straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, de-oiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds; and the wood waste produced in some industrial operations.

(e) "Biogas" means a gas created when organic matter like crop residues, sewage and manure breaks down in an oxygen-free environment (ferments);

(f) "Capacity Utilisation Factor" shall mean the total energy sent out during the period expressed as a percentage of installed capacity reduced by the normative auxiliary consumption in that period.

$$\text{CUF} = \frac{ESO \times 10^7}{\text{IC} \times (100 - \text{AUX}) \times \text{H}} \%$$

Where,

ESO- Energy Sent Out Ex-bus, i.e. at interconnection point, in MU during the period,

IC- Installed capacity in MW,

AUX - % Normative Auxiliary Consumption (viz. 8.5 for Co-generation).

H – Number of hours in the period

(g) "Capital Cost" means capital cost as defined under Regulation 15(1) of these Regulations.

(h) "Captive Generating Plant" means a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any cooperative society or association of persons for generating electricity primarily for

use of members of such cooperative society or association where not less than twenty six percent of the ownership is held by the captive user(s), and not less than fifty one percent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use.

(i) "Captive User" means the end user of the electricity generated in a Captive Generating Plant primarily for his own use and the term "captive use" shall be construed accordingly.

(j) "Commission" means the Uttarakhand Electricity Regulatory Commission;

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

(l) "Date of commercial operation or Commissioning (CoD)" in relation to a unit means the date declared by the generator on achieving maximum continuous rating through a successful trial run and in relation to the generating station, the date of commercial operation means the date of commercial operation of the last unit or block of generating station and expression 'commissioning' shall be construed accordingly. In case of Small Hydro Plants the date of commissioning shall, however, not be linked to achieving maximum continuous rating, but the generator will have to demonstrate the same within three years of commissioning.

(m) "Distribution Code" means the UERC (Distribution Code) Regulations, 2007 specified under Section 14 of the Electricity Act 2003, read with Section 181of the said Act and clause 18 of Distribution and Retail Supply Licence.

(n) "Expenditure incurred" means the fund, whether the equity or debt or both, actually deployed and paid in cash or cash equivalent, for creation or acquisition of a useful asset and does not include commitments or liabilities for which no payment has been released.

(o) "Force Majeure Event" means, with respect to any party, any event or circumstance which is not within the reasonable control of, or due to an act or omission of, that party and which, by the exercise of reasonable care and diligence, that party is not able to prevent, including, without limiting the generality of the foregoing:

i. Lightning, storm, earthquakes, flood, natural disaster and action of the natural elements;

ii. acts of public enemy, blockades, insurrections, riots, revolution and sabotage;

iii. unavoidable accident, including but not limited to fire, explosion, radioactive contamination and toxic dangerous chemical contamination;

(p) "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;

(q) "Gross Station Heat Rate" or "GSHR" means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a thermal generating station;

(r) "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.

(s) "Indian Electricity Grid Code (IEGC)" means the Grid Code specified by the Central Electricity Regulatory Commission under clause (h) of sub-section (1) of section 79 of the Act;

(t) "Infirm Power" means electricity generated during trial runs prior to commercial operation of a unit of a generating station;

(u) "Installed Capacity" or "IC" means the summation of the name plate capacities of the units in the generating station or the capacity of the generating station (reckoned at the generator terminals);

(v) "Inter-connection Point" shall mean interface point of renewable energy generating facility with the transmission system or distribution system which shall be line isolator on outgoing feeder on HV side of generator transformer;

(w) "MNRE" means the Ministry of New and Renewable Energy of the Government of India.

(x) "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 of Regulation 4(2)(e).

(y) "Open Access" means the non-discriminatory provision for the use of transmission lines or distribution system or associated facilities with such lines or system by any licensee or consumer or a person engaged in generation in accordance with the regulations specified by the Appropriate Commission;

(z) "Open Access Regulations" means the Uttarakhand Electricity Regulatory Commission (Terms and Conditions of Intra-State Open Access) Regulations, 2010 as amended from time to time;

(aa) "Operation and Maintenance Expenses" or "O&M Expenses" means the expenditure incurred in operation and maintenance of the generating station or part thereof, including the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

(bb) "Peak Hours/Off Peak Hours" means particular hours of the day as may be decided by the Commission from time to time;

(cc) "Power Purchase Agreement or PPA" means a long term agreement between a generating company and a distribution licensee for supply of power on the terms and conditions specified therein and with the provision that the tariff for sale of power shall be as determined by the Commission from time to time;

(dd) "Project" means a generating station and 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;

(ee) "Renewable Energy" means grid quality electricity generated from renewable sources.

(ff) "Renewable Energy Based Generating Stations and Non-fossil Fuel Based Co-generating Stations" means the power plants other than the conventional generating stations generating grid quality electricity from Renewable Energy Sources.

(gg) "Renewable Energy Sources" means renewable sources such as small hydro, wind, solar including integration with combined cycle biomass, bio fuel co-generation, urban or municipal waste and other such sources as approved by MNRE.

(hh) "Small Hydro Plant" means Hydro Power projects with installed capacity upto and including 25 MW.

(ii) "Solar Photo Voltaic Power Project" means the project that uses sunlight for direct conversion into electricity through photovoltaic technology.

(jj) "Solar Thermal Power Project" means the project that uses sunlight for conversion into electricity through concentrated Solar Power Technology based on either line focus or point focus principle.

(kk) "Saleable Energy" means the quantum of energy available for sale (ex-bus) after allowing for free energy, if any, to the home State;

(ll) "State Grid Code" means the Uttarakhand Electricity Regulatory Commission (State Grid Code) Regulations, 2007 specified under clause (h) of sub-section (1) of section 86 of the Act by Uttarakhand Electricity Regulatory Commission;

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

(nn) "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:-

(i)	Wind energy power project	25 years
(ii)	Biomass power project with rankine cycle technology	20 years
(iii)	Non-fossil fuel cogeneration project	20 years
(iv)	Small Hydro Plant	35 years
(v)	Solar PV/Solar thermal / grid interactive roof top and small solar PV plants	25 years
(vi)	Biomass Gasifier based power project	20 years
(vii)	Biogas based power project	20 years

(oo) "Year" means a financial year.

(2) Save as aforesaid and unless repugnant to the context or if the subject matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the UERC (State Grid Code) Regulations or the Commission's Regulations on

determination of Tariff shall have the meanings assigned to them respectively in the Act or the State Grid Code or the Commission's Regulations on determination of Tariff.

CHAPTER 2

GENERAL CONDITIONS

4. Eligibility Criteria for qualifying as Generating Station based on Non-Conventional/ Renewable Energy Source

(1) For the purposes of these Regulations, generation from all types of Renewable Energy Sources and non-fossil fuel based Co-generating Plants, as approved by Ministry of New and Renewable Energy (MNRE), Government of India shall be considered and such generating stations shall be collectively referred to as RE Based Generating Stations and Co-generating Stations.

(2) At present, generation from following sources and technologies shall qualify to be covered under these Regulations:

(a) Small hydro project– Generating Stations being developed in accordance with the prevalent policies of the State Government in this regard and using new plant and machinery with capacity lower than or equal to 25 MW, at single location.

(b) Wind power project – located at the wind sites having minimum annual mean Wind Power Density (WPD) of 200 Watt/m2 measured at hub height of 50 meters and using new wind turbine generators.

(c) Solar PV, Solar Thermal and grid interactive roof top and small solar PV Power Projects– Based on Technologies approved by MNRE.

(d) Biomass/Biogas power project - Biomass power projects using new plant and machinery based on Rankine Cycle technology and using biomass fuel sources, provided use of fossil fuel is restricted only to 15% of total fuel consumption on annual basis;

(e) Non-fossil fuel based Co-generating Stations - 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).

(iv) 'Topping cycle' means a cogeneration process in which thermal energy produces electricity followed by useful heat application in industrial activities.

(f) Biomass Gasifier based Power Project – The project shall qualify to be termed as a biomass gasifier based power project, if it is using new plant and machinery and having a Grid connected system that uses 100% producer gas engine, coupled with gasifier technologies approved by MNRE.

(g) Biogas based Power Project – The project shall qualify to be termed as a biogas based power project, if it is using new plant and machinery and having grid connected system that uses 100% Biogas fired engine, coupled with Biogas technology for co-digesting agriculture residues, manure and other bio waste as may be approved by MNRE.

(3) Any new source or technology would qualify as 'renewable energy', only after the technology for the same has been approved by MNRE approval. Further, the Commission shall determine tariffs separately for each technology after the approval of the technology by MNRE.

5. Environmental and other Clearances

(1) The RE Based Generating Stations and Co-generating Stations shall abide by the emission standards as may be set by the Union/State Government, and for that purpose it shall obtain all the required environmental and pollution clearances from the Central/State Pollution Control authorities, wherever applicable.

(2) The RE Based Generating Stations and Co-generating Stations shall obtain necessary clearances from Uttarakhand Renewable Energy Development Agency (UREDA), wherever necessary.

6. Obligations and Duties of the Generating Station

(1) RE Based Generating Stations and Co-generating Stations shall indicate the capacity of its generating plant in the 'Detailed Project Report' (DPR) keeping in view the potential of electricity generation available from such source and its optimal utilization. It shall further be obliged to submit the DPR, progress of construction and details regarding commissioning of the generating plant or any other related information to the Commission in such form and manner as may be required by the Commission.

(2) The RE Based Generating Stations and Co-generating Stations shall:

(a) Submit the technical details concerning the generation and/or transmission as may be specified by the Authority/Commission for carrying out studies relating to cost and efficiency.

(b) Submit the information in respect to generation, demand met, capacity availability, capacity utilization factor, auxiliary consumption, specific heat rate and specific oil consumption or on any other parameters etc. as may be directed by the Commission.

(c) Shall Establish a communication and data transfer system with State Load Dispatch Centre and Co-ordinate with State Load Dispatch Centre and the Regional Load Dispatch Center in respect to;

(i) Scheduling

(ii) Exchange of data of quantity of electricity transmitted through the grid.

(iii) Real time grid operation and dispatch of electricity in accordance with IEGC and State Grid Code.

(3) The RE Based Generating Stations and Co-generating Stations shall abide by the grid discipline and install adequate protection equipment for safety of its system and human life. It shall not be entitled for any compensation in the event of grid failure or any interruptions or damage to the plant or its associated sub-station and transmission line on account of any occurrence in the grid.

(4) The RE Based Generating Stations and Co-generating Stations shall establish, operate and maintain generating station and the associated substation. The dedicated transmission lines, if constructed by the generator, shall also be operated and maintained by it (without the requirement of a license). These shall be in accordance with:

(a) The technical standards for construction of electrical plants, electric lines and connectivity with the grid as specified by the Authority (section 73 (b) of the EA 2003).

(b) Safety requirements for construction, operation and maintenance of electrical plants and electric lines as specified by the Authority (section 73 (c) of the EA 2003).

(c) Grid standards for operation and maintenance of transmission lines as specified by Central Electricity Regulatory Commission/Central Electricity Authority or the State Transmission Utility (section 73 (d) of the EA 2003).

(d) The conditions for installation of meters for supply of electricity as specified by the Authority or the State Transmission Utility (section 73 (e) of the EA 2003).

(5) The RE Based Generating Stations and Co-generating Stations shall ensure the compliance of the 'IEGC', the State Grid Code and the Distribution Code as amended from time to time.

(6) The RE Based Generating Stations and Co-generating Stations shall ensure compliance of any general or specific direction issued and regulations made by the Commission for the generating companies.

(7) Except as provided in the Second Proviso to sub-Regulation (1) of Regulation 2 above, all Power Purchase Agreements signed by the generating stations existing on the date of notification of these regulations shall be amended in accordance with these regulations, if

inconsistent with these Regulations and such amended PPAs shall be valid for entire life of the RE Based Generating Stations and Co-generating Stations.

(8) The RE Based Generating Stations and Co-generating Stations shall coordinate with State Transmission Utility/Distribution Licensee for the purpose of planning and coordination relating to intra-state transmission/distribution system as provided under the Act.

(9) The RE Based Generating Stations and Co-generating Stations shall pay fee and charges to the State Load Dispatch Centre as may be specified or directed by the Commission from time to time.

(10) The RE Based Generating Stations and Co-generating Stations shall be under obligation to comply with the directions issued to it by the State Load Dispatch Centre failing which the plant shall be liable to a penalty not exceeding Rs. 5 lac for each such non-compliance.

(11) In case of dispute with reference to quality of electricity or safe, secure and integrated operation of the grid or in relation to any direction issued by the State Load Dispatch Centre, the matter shall be referred to the Commission for adjudication.

7. Sale of Power

(1) All RE Based Generating Stations and Co-generating Stations shall be allowed to sell power, over and above the capacity required for their own use, to the distribution licensee or to local rural grids at the rates determined by the Commission or to any consumer (provided that such consumer has been allowed Open Access under Open Access Regulations) or to any person within the State or outside the State at mutually agreed rates.

(2) The distribution licensee on an offer made by the said RE based Generating Stations and Co-generating Stations shall enter into a power purchase agreement in conformity with these Regulations and relevant provisions of other Regulations and the Act. The distribution licensee shall sign the PPA within two months of offer made by the generating company, failing which the generating company may approach the Commission for suitable remedy.

(3) The distribution licensee shall make an application for approval of power purchase agreement entered into with the generating station in such form and manner as specified in these regulations and Uttarakhand Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 as amended from time to time.

8. Open Access

(1) Non-discriminatory Open access in State Transmission/Distribution System shall be allowed to all RE based Generating stations and Co-generating Stations for captive use and to those covered under Regulation 7(1), which shall be subject to the provisions of the Open Access Regulations.

Provided that the 'open access' shall be allowed subject to the availability of surplus capacity in the State Transmission/ Distribution System.

(2) Such open access shall be subject to payment of transmission/wheeling charges and adjustment of average transmission/distribution losses in kind as determined in accordance with the provisions of Regulation 38.

(3) If any question arises as to the availability of surplus capacity in the State transmission system or the State distribution system, the matter shall be adjudicated and decided by the Commission.

CHAPTER 3

RENEWABLE PURCHASE OBLIGATION (RPO)

9. Minimum Quantum of electricity to be purchased by distribution licensees from 'non-fossil fuel based co-generation and generation of electricity from renewable energy sources'

(1) In line with the provisions of the Act, National Electricity Policy and the Tariff Policy, to promote development of renewable and non–conventional sources of energy, all existing and future distribution licensees, captive users and open access customers, hereinafter referred to as "Obligated Entity", in the State shall be obliged to procure minimum percentage of their total electricity requirement for own consumption, as indicated below, from eligible renewable energy sources as defined under Regulation 4. The same shall be called the Renewable Purchase Obligation (RPO) of the Obligated Entities.

Year	Renewable Purchase Obligation -Non-Solar	Renewable Purchase Obligation - Solar
2013-14	6.00%	0.050%
2014-15	7.00%	0.075%
2015-16	8.00%	0.100%
2016-17	9.00%	0.300%
2017-18	11.00%	0.500%

* Percentage RPO as stipulated above denotes Minimum Quantum of purchase from non-fossil fuel based co-generation and generation of electricity from renewable energy sources' as a percentage of total energy purchased from all sources/generated by the Obligated Entity during the year for own consumption

Provided that if energy from renewable and non–conventional sources of energy becomes available, over and above the specified RPO, the generator or the obligated entity shall approach the Commission.

(2) For the purpose of this RPO framework, for every obligated entity, own consumption would mean gross energy consumed or purchased by the obligated entity from all sources for its own use or for the purpose of supply to its consumers within its area of supply, excluding any inter-se sale of electricity amongst the Licensees or outside consumers.

CHAPTER 4

TARIFF- GENERAL PRINCIPLES

10. Tariffs

(1) The tariff determined under these Regulations shall be applicable for sale of electricity to the distribution licensees and to local rural grids only. The Commission shall as far as possible be guided by the principles and methodologies, if any, specified by the CERC, National Electricity Policy and the Tariff policy.

(2) The RE Based Generating Stations and Co-generating Stations, except those mentioned under Proviso 2 to sub- Regulation (1) of Regulation 2, may opt for the generic tariff, as determined based on norms specified in these Regulations for different technologies, or may file a petition before the Commission for determination of "Project Specific Tariff". For this purpose RE Based Generating Stations and Co-generating Stations shall give its option to the distribution licensee at least 3 months in advance of date of commissioning of the project or commissioning of the Ist unit, in case of multiple units or one month after the date of issuance of these Regulations, whichever is later. This option once exercised shall not be allowed to be changed during the validity period of the PPA.

(3) Project Specific Tariff, on case to case basis, shall be determined by the Commission in the following cases:

(a) For projects opting to have their tariffs determined on the basis of actual capital cost instead of normative capital cost as specified for different technologies under Chapter 5, the CUF (generation) for recovery of fixed charges shall be taken as that envisaged in the approved DPR or the normative CUF specified under Chapter 5 for the relevant technology, whichever is higher;

(b) Other hybrid projects include renewable–renewable or renewable–conventional sources, for which renewable technology is approved by MNRE;

(c) Projects having old plant and machinery or equipment;

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

Provided that the Commission while determining the Project Specific Tariff shall be guided by the provisions of Chapters 4 & 5 of these Regulations for technologies specified therein.

11. Control Period or Review Period

(1) The Control Period or Review Period under these Regulations shall be of five years, of which the first year shall be the financial year 2013-14.

Provided that the benchmark capital cost for Solar PV, Solar thermal and grid interactive roof top and small solar PV 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 Tariff Period (Useful life of the plant) as specified under Regulation 3(1)(nn).

12. Tariff and PPA Period

(1) The Tariff Period for Renewable Energy power projects shall be equal to Useful life of the Project.

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

(3) The PPA shall be required to be executed with distribution licensee for the entire Tariff Period.

13. Petition and proceedings for determination of Project Specific Tariff

(1) The RE Based Generating Stations and non-fossil fuel based Co-generating Stations may make an application for fixation of Project Specific Tariff based on actual Capital Cost in

respect of the completed units of the RE Based Generating Stations and Co-generating Stations in such formats and along with such information as the Commission may require from time to time.

Provided that for Project Specific Tariff determination, the RE Based Generating Stations and Co-generating Stations shall submit the break-up of Capital Cost items along with its petition.

(2) Till fixation of final tariffs a RE Based Generating Stations or Co-generating Stations may either accept the generic tariff as provisional tariff or make an application for determination of provisional tariff in advance of the anticipated date of completion of project based on the capital expenditure actually incurred up to the date of making the application or a date prior to making of the application, duly audited and certified by the statutory auditors. The provisional tariff as may be determined by the Commission may be charged from the Commercial Operation Date (CoD) of the respective unit of the generating station.

Provided that the RE Based Generating Stations and Co-generating Stations shall be required to make a fresh application for determination of final tariff based on actual capital expenditure incurred up to the date of commercial operation or commissioning of the generating station, with duly audited and certified copies of accounts by the statutory auditors within 18 months from the CoD.

(3) The generating company shall file application for determination of tariff for as many years for which it wants the tariff to be fixed.

(4) A petition for determination of tariff shall be accompanied by such fee as specified in the UERC (Fee and Fines) Regulations, 2002, as amended from time to time, and shall be accompanied by:

(a) information in forms 1.1, 1.2, 2.1 and 2.2 as the case may be, and as appended in these regulations;

(b) Detailed project report outlining technical and operational details, site specific aspects, premise for capital cost and financing plan etc.

(c) A Statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.

(d) A statement containing full details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government. This statement shall also separately include the proposed tariff calculated with and without consideration of the subsidy and incentive.

(e) Any other information that the Commission requires the Petitioner to submit.

(5) The proceedings for determination of tariff shall be in accordance with the UERC (Conduct of Business Regulations), 2004.

14. Tariff Structure

(1) The tariff for renewable energy technologies shall be single part tariff (in Rs./kWh) and ex-bus, i.e. after auxiliary consumption and transformation losses at the interconnection point as defined in Regulation 3(1)(v).

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

(2) The Tariff shall consist 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;

(3) The generic tariff is being determined separately for each kind of renewable source and for each type of renewable technology for which norms have been specified in these Regulations.

(4) The generic tariff is based on normative parameters as per the norms specified in these Regulations for each type of source and the year of commissioning of the plant. Tariff in respect of a RE Based Generating Stations and Co-generating Stations under these Regulations shall be applicable for the whole generating station.

Provided that the generic tariff for supply of electricity from the plant, having more than one unit commissioned during currency of different control period, shall be based on

weighted average of the tariffs specified under different Regulations for the total capacity of the plant.

(5) The levelised tariffs for the life of the project shall be specified for the RE Based Generating Stations and Co-generating Stations.

Provided that for renewable energy technologies having tariff (in Rs./kWh) with two components, for fixed cost component tariff may be determined on levelised basis considering the year of commissioning of the project while the fuel cost component shall be specified on year of operation basis.

(6) For the purpose of levelised tariff computation, the discount factor equivalent to weighted average cost of capital shall be considered. For determination of weighted average cost of capital, the pre-tax return on equity would be adjusted for tax at the applicable rates.

(7) The generic tariff being normative, any shortfall or gain due to performance or other reasons is to be borne/retained by the RE Based Generating Stations and Co-generating Stations and no true up of any parameter, including additional capitalisation for whatsoever reasons, shall be taken up during the validity of the tariff.The tariff for supply of electricity between the period of synchronization and the commissioning of the unit (Infirm Power) shall be equal to 50% of fixed cost component of levelised generic tariff for the useful life of the project. However, renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration, shall also be entitled to get the fuel cost component of tariff for that year in addition to 50% of the levelised generic tariff.

Provided that where project specific tariff is being determined the revenue generated from infirm power shall be used to reduce the capital cost of the project after giving credit for cost of fuel consumed, wherever applicable..

15. Financial Principles

(1) Capital Cost

(a) The norms for the Capital Cost as specified in the subsequent technology specific provisions in Chapter 5 shall include the expenditure incurred or projected to be incurred, initial spares, interest during construction and financing charges, any gain or loss on account of foreign exchange risk variation during construction on loans arrived in the manner specified in sub Regulation 2 below upto the date of

commercial operation or commissioning of the project, as admitted by the Commission after prudence check. The capital cost shall also include the expenditure incurred or projected to be incurred towards the evacuation infrastructure upto point of interconnection (i.e. it does not include cost of dedicated line and associated equipment from point of interconnection up-to the nearest sub-station of transmission or distribution licensee to which generating station is connected). For calculation of project specific tariff the capital cost shall also include the expenditure incurred or projected to be incurred towards additional capitalization.

(b) In case, the generating company opts to construct the evacuation infrastructure from point of inter-connection to the nearest sub-station of transmission or distribution licensee to which the generating station is connected, it shall be allowed a normative levelised tariff of 5 paise/unit over and above the generic tariff determined at the point of inter-connection. However, in case of a solar generating company a normative levelised tariff of 12 paise/unit over and above the generic tariff determined at the point of inter-connection shall be allowed. The said normative tariff for evacuation infrastructure has been arrived at considering the cost of normative line length of 10 kms. (including cost of terminal equipments) for different capacities of generating stations as per normative cost given below:

i.	Upto 3 MW, 11 kV S/C	- Rs. 44 lakh
ii.	Above 3 MW and upto 13 MW, 33 kV S/C	- Rs. 85 lakh
iii.	Above 13 MW and upto 25 MW, 33 kV 2 x S/C or DC	- Rs. 170 lakh

(c) Where the dedicated line has been constructed by the generating company, the distribution licensee will have to pay the additional tariff specified above to the generating company provided ownership of such lines remains with the generating company. However the first option shall be given to the distribution licensee for either buying the evacuation line of the Generating Company at the depreciated cost indicated in the latest audited accounts of the generating company, or pay additional tariff as per regulations.

Provided that the distribution licensee will be required to exercise the option within one year from the date of commissioning or CoD of the project.

(2) Debt-Equity Ratio

The debt-equity ratio for generic and project specific tariff shall be as follows:

(a) For generic tariff debt–equity ratio shall be 70:30.

(b) 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 designated in Indian rupees on the date of each investment.

(3) Subsidy available from MNRE, to the extent specified under Regulation 24, shall be considered to have been utilized towards pre-payment of debt leaving balance loan and 30% equity to be considered for determination of tariff.

Provided further that it shall be assumed that the original repayments shall not be affected by this prepayment.

(4) The amount of subsidy shall be considered for each renewable source as per the applicable policy of MNRE. If the amount of subsidy is increased or reduced by MNRE, then necessary corrections in tariffs would be carried out by the Commission provided the reduction in subsidy amount is not due to the inefficiency of the generating company.

16. Interest on loan capital

(1) The loans arrived at in the manner indicated in Regulation 15(2) shall be considered as gross normative loan for calculation of interest on loan. The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to 31st March of previous year from the gross normative loan.

(2) For the purpose of computation of generic tariff, the normative interest rate shall be considered as average State Bank of India (SBI) Base Rate prevalent during the first six months of the previous year plus 300 basis points.

For the purpose of computation of project specific tariff, interest rate shall be considered as lower of the actual interest payable to the financial institutions or the average State Bank of India (SBI) Base Rate prevalent during the first six months of the previous year plus 300 basis points

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

While calculating project specific tariff, 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 or actual repayment made, whichever is higher.

(4) Normative period of loan repayment shall be taken as 12 years.

17. Depreciation

(1) For the purpose of tariff, depreciation shall be computed in the following manner, namely:

(a) The value base for the purpose of depreciation shall be the capital cost of the project as admitted by the Commission in accordance with sub-regulation (2) below.

(b) 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.

(c) 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'. For generic tariff the depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 13th year onwards.

(d) 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 for computation of project specific tariff.

(2) 75% of the Capital subsidy received by the generator shall be reduced from the capital cost for depreciation purposes.

18. Return on Equity

(1) The value base for the equity shall be as determined under Regulation 15(2).

(2) The Return on Equity shall be:

(a) Pre-tax 20% per annum for the first 10 years.

(b) Pre-tax 24% per annum 11th year onwards.

19. Interest on Working Capital

(1) The Working Capital requirement in respect of wind energy projects, small hydro power, Solar PV, Solar thermal and grid interactive roof top and small solar PV 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;

Provided for determination of project specific tariff sale of electricity will be calculated based on the CUF envisaged in the approved DPR or the normative CUF specified for the relevant technology under Chapter 5, whichever is higher.

(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:

(a) Fuel costs for four months equivalent to normative CUF;

(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 normative CUF;

(d) Maintenance spare @ 15% of operation and maintenance expenses

Provided that for determining fuel/variable charges, the normative escalation factor of 5% shall be considered.

Provided further that for determination of project specific tariff, CUF will be taken as the CUF envisaged in the approved DPR or the normative CUF specified for the relevant technology under Chapter 5, whichever is higher.

(3) Interest on Working Capital shall be at interest rate equivalent to the average State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points.

20. Operation and Maintenance expenses

(1) Operation and maintenance expenses for the year of commissioning shall be determined based on normative O&M expenses specified by the Commission under Chapter 5 for different technologies for the first Year of Control Period, i.e. for FY 2013-14. These expenses shall be escalated @ 5.72% p.a. to arrive at O&M expenses for the ensuing years.

(2) Normative O&M expenses allowed for the year of commissioning shall be escalated at the rate of 5.72% p.a. to determine the O&M expenses for the different years of the Tariff Period.

21. 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 or commissioning 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.

(c) The CDM benefits shall not be considered for determination of levelised or yearly tariff and total amount of proceeds shall be remitted directly by the generating company to the distribution licensee for each financial year within one month of its receipt alongwith auditor's certification in accordance with above provisions.

22. Rebate

(1) For payment of bills through the letter of credit on presentation, a rebate of 2% shall be allowed.

(2) Where payments are made by a mode other than through the letter of credit but within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.

23. Late Payment Surcharge

In case the payment of bills 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 or part thereof shall be levied by the generating company.

24. 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 only 75% of the capital subsidy for the financial year of commissioning as per applicable scheme of MNRE shall be considered for tariff determination.

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 capital cost admitted, 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 levelised basis at discount factor equivalent to Post Tax weighted average cost of capital.

(c) It shall be assumed that the generating company shall avail the benefit of accelerated depreciation and the onus of establishing, to the satisfaction of distribution licensee, that it is not entitled for this benefit shall be that of such generating company. The auditor's certificate in this regard shall be considered sufficient for this purpose.

Provided further that where Central Government or the State Government has notified any Generation Based Incentive Scheme for a particular kind of renewable technology such technology based generating stations shall be assumed to have availed the benefit of such a scheme and their tariffs shall automatically be treated as reduced by the amount of GBI per unit.

25. Taxes and Duties

Tariff determined under these regulations shall be including direct taxes on income but exclusive of other taxes and duties as may be levied by the appropriate Government. For generic tariff determination, the tax rate for first 10 years has been considered as 18.50% and 30% for balance period alongwith 5% surcharge and 3% education cess.

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

26. Incentive for generation beyond CUF

(1) For projects opting for generic tariff, the tariff for generation beyond normative CUF, when entire fixed cost has been recovered, shall be allowed to be recovered at the generic tariff determined by the Commission.

(2) For projects opting for project specific tariffs, the tariff for generation beyond the applicable CUF (i.e. the CUF envisaged in the approved DPR or the normative CUF specified for the relevant technology under Chapter 5, whichever is higher), when entire fixed cost has been recovered, shall be allowed to be recovered at the project specific tariff determined by the Commission.

27. Applicability of Merit Order to RE Sources

Since RE Sources are dependent on vagaries of nature and are of small capacities, the principle of merit order dispatch/purchase shall not be applicable to supply of power from such sources to the distribution licensee or local rural grids within the State, i.e. they shall be treated as must run stations.

CHAPTER 5

TECHNOLOGY SPECIFIC PARAMETERS

28. Small Hydro Generating Plant

The technology specific parameters for determination of generic tariffs for Small Hydro Generating Stations shall be as below:

Projects Commissioned on or after 01.04.2013

Project Size	Capital Cost	O&M Expenses for year of commissioning	Capacity Utilization Factor	Auxiliary Consumption
	(Rs. Lakh/MW)	(Rs. Lakh/MW)	(%)	(%)
Upto 5 MW	785	26.43	45%	1%
> 5 MW & upto 15 MW	750	22.73		
> 15 MW & upto 25 MW	715	19.03		

NOTE:

For the purpose of this Regulation, normative CUF is based on Energy Sent Out at interconnection point and for tariff purposes energy net of free power to the home State, if any, committed by the developer shall be factored. For generic tariff determination, home State share has been taken as 18% from 16th year onwards.

29. Biomass Power Projects based on Rankine Cycle Technology

(1) The technology specific parameters for determination of generic tariffs for Biomass Power Projects based on Rankine Cycle Technology using water cooled condenser shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Station Heat Rate	Calorific value of fuel	Auxiliary Consumption	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	(kCal / kWh)	(kCal/kg)		
445	25.37	4000	3300	10%	i. During the first year- 65%
					ii. From 2nd Year onwards: 80 %

NOTE:

(a) Biomass Fuel Price (P) for the first year of the Control Period, i.e. FY 2013-14 shall be taken as Rs. 1845/MT, which shall be indexed for different years of tariff period based on annual inflation rate for fuel handling (WPI), Indexed Energy Charge Component (IRC) and transportation cost (price for high speed diesel: Pd) with 20%, 60% and 20% respective weightages as per following formula:

(b) P(n) =P(n-1) * {0.2 * (WPI(n)/WPI(n-1) + 0.6 * (1+IRC)(n-1) + 0.2 * (Pd(n)/Pd(n-1)))}

(c) However, as the indices for nth year would be known only after close of nth year, the generating company shall be allowed to raise fuel cost bills for nth year based on normative escalation factor of 5% on previous year's fuel cost, which shall be adjusted based on actual index for the nth year

(d) 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.

Provided that the generating company has to give his option for normative or indexed fuel cost to the distribution licensee at least 3 months in advance of date of commissioning or one month after the date of issuance of these Regulations, whichever is later. The option once exercised shall not be allowed to be changed during the validity period of the PPA.

(2) The fuel cost component of the tariff for nth Year shall be calculated as follows:

$$\text{Rate of Variable Charge (Rs./kWh) } VC_n = \frac{\text{Gross Station Heat Rate (GSHR)}}{\text{Gross Calorific Value (GCV)}} \text{ x } \frac{Pn}{(100 - AUX)} \times 10$$

(3) Fuel Mix

(a) 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.

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

(4) Use of Fossil Fuel

The use of fossil fuels shall be limited to the extent of 15% of total fuel consumption on annual basis.

(5) Monitoring Mechanism for the use of fossil fuel

(a) The Project developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant to the beneficiary for each month, along with the monthly energy bill. The statement shall cover details such as-

(i) Quantity of fuel (in tonnes) for each fuel type (biomass fuels and fossil fuels) consumed and procured during the month for power generation purposes,

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

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

(iv) Cumulative actual (gross and net) energy generation (denominated in units) until the end of that month during the year,

(v) Opening fuel stock quantity (in tonnes),

(vi) Receipt of fuel quantity (in tonnes) at the power plant site and

(vii) Closing fuel stock quantity (in tonnes) for each fuel type (biomass fuels and fossil fuels) available at the power plant site.

(b) Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall render power generated by such biomass power project ineligible as the generation from renewable source during such financial year. However, such defaulting biomass power project shall continue to sell power to the distribution licensee and the rate during the financial year in which default occurred shall be the rate lower by Rs. 1/kWh of the applicable variable tariff specified by the Commission.

30. Non-fossil fuel based Cogeneration Projects

(1) The technology specific parameters for determination of generic tariffs for Non-fossil fuel based Cogeneration Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Station Heat Rate	Calorific value of fuel	Auxiliary Consumption	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	(kCal / kWh)	(kCal/kg)		
420	16.92	3600	2250	8.5%	45%

(2) Fuel Cost (P) for the first year of the Control Period, i.e. FY 2013-14 shall be taken as Rs. 1531/MT, which shall be indexed for different years of tariff period based on annual inflation rate for fuel handling (WPI), Indexed Energy Charge Component (IRC) and transportation cost (price for high speed diesel: Pd) with 20%, 60% and 20% respective weightages as per following formula:

$$P_{(n)} = P_{(n-1)} * \{0.2 * (WPI_{(n)}/WPI_{(n-1)} + 0.6 * (1+IRC)_{(n-1)} + 0.2 * (Pd_{(n)}/Pd_{(n-1)})\}$$

However, as the indices for nth year would be known only after close of n^{th} year, the generating company shall be allowed to raise fuel cost bills for n^{th} year based on normative escalation factor of 5% on previous year's fuel cost, which shall be adjusted based on actual index for the n^{th} year

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.

Provided that the generating company has to give his option for normative or indexed fuel cost to the distribution licensee at least 3 months in advance of date of commissioning or one month after the date of issuance of these Regulations, whichever is later. The option once exercised shall not be allowed to be changed during the validity period of the PPA.

(3) The fuel cost component of the tariff for nth Year shall be calculated as follows:

$$\text{Rate of Variable Charge (Rs./kWh) } VC_n = \frac{\text{Gross Station Heat Rate (GSHR)}}{\text{Gross Calorific Value (GCV)}} \text{ x } \frac{P_n}{(100 - AUX)} \times 10$$

31. Biomass Gasifier Power Projects

(1) The technology specific parameters for determination of generic tariffs for Biomass Gasifier Power Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Specific Fuel Consumption	Auxiliary Consumption	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	(kg/kWh)		
550	42.29	1.25	10%	85%

(2) Biomass Fuel Price (P) for the first year of the Control Period, i.e. FY 2013-14 shall be taken as Rs. 1845/MT, which shall be indexed for different years of tariff period based on annual inflation rate for fuel handling (WPI), Indexed Energy Charge Component (IRC) and transportation cost (price for high speed diesel: Pd) with 20%, 60% and 20% respective weightages as per following formula:

(a) $P_{(n)} = P_{(n-1)} * \{0.2 * (WPI_{(n)}/WPI_{(n-1)} + 0.6 * (1+IRC)_{(n-1)} + 0.2 * (Pd_{(n)}/Pd_{(n-1)}))\}$

(b) However, as the indices for nth year would be known only after close of nth year, the generating company shall be allowed to raise fuel cost bills for nth year based on normative escalation factor of 5% on previous year's fuel cost, which shall be adjusted based on actual index for the nth year

(c) 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.

Provided that the generator has to give his option for normative or indexed fuel cost to the distribution licensee at least 3 months in advance of date of

commissioning or one month after the date of issuance of these Regulations, whichever is later. The option once exercised shall not be allowed to be changed during the validity period of the PPA.

(3) The fuel cost component of the tariff for nth Year shall be calculated as follows:

$$\text{Rate of Variable Charge (Rs./kWh) } VC_n = \text{Specific Fuel Consumption x } \frac{Pn}{(100 - AUX)} \times 10$$

(4) Fuel Mix

(a) The biomass gasifier based 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.

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

32. Biogas based Power Projects

(1) The norms for tariff determination specified hereunder are for grid connected biogas based power projects that uses 100% biogas fired engine, coupled with biogas technology for co-digesting agriculture residues, manure and other bio waste as may be approved by MNRE. The technology specific parameters for determination of generic tariffs for Biogas based Power Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Specific Fuel Consumption	Auxiliary Consumption	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	(kg/kWh)		
1100	42.29	3.00	12%	90%

(2) Feed stock price (P) for the first year of the Control Period, i.e. FY 2013-14 shall be taken as Rs. 1040/MT (net of any cost recovery from digester effluent), which shall be indexed for different years of tariff period based on annual inflation rate for fuel handling (WPI), Indexed Energy Charge Component (IRC) and transportation cost (price for high speed diesel: Pd) with 20%, 60% and 20% respective weightages as per following formula:

(a) $P_{(n)} = P_{(n-1)} * \{0.2 * (WPI_{(n)}/WPI_{(n-1)} + 0.6 * (1+IRC_{(n-1)} + 0.2 * (Pd_{(n)}/Pd_{(n-1)}))\}$

(b) However, as the indices for nth year would be known only after close of nth year, the generating company shall be allowed to raise fuel cost bills for nth year based

on normative escalation factor of 5% on previous year's fuel cost, which shall be adjusted based on actual index for the nth year

(c) 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 biogas project developer.

Provided that the generating company has to give his option for normative or indexed fuel cost to the distribution licensee at least 3 months in advance of date of commissioning or one month after the date of issuance of these Regulations, whichever is later. The option once exercised shall not be allowed to be changed during the validity period of the PPA.

(3) The fuel cost component of the tariff for nth Year shall be calculated as follows:

$$\left[\text{Rate of Variable Charge (Rs./kWh) } VC_n = \text{Specific Fuel Consumption } x \frac{Pn}{(100 - AUX)} \times 10\right]$$

33. Solar PV Power Project

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. The technology specific parameters for determination of generic tariffs for Solar PV Power Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	
1000	11.63	19 %

34. Solar Thermal Power Project

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. The technology specific parameters for determination of generic tariffs for Solar Thermal Power Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Capacity Utilization Factor	Auxiliary Consumption
(Rs. Lakh/MW)	(Rs. Lakh/MW)		
1300	15.86	23%	10%

35. Grid interactive roof top and small solar PV plants

(1) The technology specific parameters for determination of generic tariff for Grid interactive roof top and small solar PV plants shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O&M Expenses for year of commissioning	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	
1025	11.63	19 %

(2) Roof-top Solar PV sources can be installed for injecting into the distribution system of a licensee by any person.

(3) Such injection from roof-top solar PV sources of the above mentioned consumer(s) shall be settled on net energy basis at the end of each billing period.

(4) The tariff, as per tariff orders of the Commission, in respect of the supply of electricity to the consumers by the distribution licensee shall be applicable for the net energy supplied by the licensee in a billing period if the supplied energy by the licensee is more than the injected energy by the roof-top solar PV sources of the consumer(s).

(5) If in a billing period the supplied energy by the licensee is less than the energy injected by the roof-top solar PV sources of the consumer(s), the licensee would be billed at the generic tariff specified in these Regulations for excess energy supplied by the consumer.

36. Wind Energy

The technology specific parameters for determination of generic tariffs for Wind Projects shall be as below:

Projects Commissioned on or after 01.04.2013

Capital Cost	O & M Expenses	Annual Mean Wind Power Density	Capacity Utilization Factor
(Rs. Lakh/MW)	(Rs. Lakh/MW)	(W/m^2)	
515	9.51	Upto 200	20%
		201-250	22%
		251-300	25%
		301-400	30%
		>400	32%

NOTE:

a) For applicability of tariff, the generating company shall provide duly validated information on annual mean wind power density. The annual mean wind power density specified above shall be measured at 80 meter hub-height.

b) For the purpose of classification of wind energy project into particular wind zone class, as per MNRE guidelines for wind measurement, wind mast either put-up by C-WET or a private developer duly validated by C-WET would be normally extended 10 km from the mast-point to all directions for uniform terrain and limited to appropriate distance in complex terrain with regard to complexity of the site. Based on such validation by C-WET, State Nodal Agency should certify zoning of the proposed wind farm complex.

37. Generic Tariffs

The generic tariffs for the above-mentioned technologies are given in **Annexure 1.**

CHAPTER 6

MISCELLANEOUS

38. Transmission Charges, Wheeling Charges and Losses

(1) Transmission Charges: For non-discriminatory 'open access' to the intra-State transmission system for carrying the electricity generated by the RE Based Generating Stations or Co-generating Stations to the destination of use, the RE generator or the consumer, as the case may be, shall have to pay the transmission charges and wheeling charges for use of intra-state transmission system and distribution system which shall be calculated based on the principles specified in UERC (Terms and Conditions of Intra-State Open Access) Regulations, 2010.

Provided that no Transmission and Wheeling Charges are payable for sale of electricity to distribution licensee or to local rural grid within the State.

Provided further that where a generating company proposes to supply electricity outside the State, such generating company, in addition to transmission/wheeling charges specified above, shall have to bear the transmission/wheeling charges determined by the Commission on case to case basis for the dedicated lines and substation of the transmission/distribution licensee used only for evacuation of such power.

Provided further that where more than one generating company proposes to supply electricity outside the State over common dedicated transmission/distribution system of transmission/distribution licensee for evacuation of their power, such generating companys, in addition to transmission/wheeling charges specified above, shall have to bear the full transmission/wheeling charges determined by the Commission on case to case basis for such dedicated lines and substation of the transmission/distribution licensee used only for evacuation of such power on pro-rata basis of installed capacity.

(2) In addition to Transmission and Wheeling Charges, the losses in the intra-State Transmission/Distribution System and dedicated lines and sub-stations, if applicable as above, shall be adjusted in kind based on the principles specified in UERC (Terms and Conditions of Intra-State Open Access) Regulations, 2010.

Provided further that no losses shall be adjusted in kind for sale of electricity to distribution licensees within the State or to local rural grid.

39. Evacuation of Power

(1) Transmission Licensees and Distribution Licensees shall endeavor to provide connectivity to the RE Based Generating Stations and Co-generating Stations at nearest possible sub-station preferably within a range of 10 kilometers from the location of such generating station. They may further mutually agree to provide connectivity at appropriate voltage level subject to technical feasibility and technical standards for construction of electrical lines and connectivity with the grid as may be specified by CEA.

(2) In case the generating company opts to construct the evacuation system including the transmission/distribution line upto the nearest substation of Transmission/Distribution Licensee, the required bay, terminal equipments and associated synchronization equipment etc, the cost of such evacuation system shall be borne by the generating station.

The generating station may also get the work of construction of the power evacuation system carried out by State transmission/distribution licensee.

Provided further that the land for extending the bay shall be provided by the owner of the sub-station free of cost.

40. Maintenance of Transmission lines and Equipment

(1) The generating station shall be responsible for the maintenance of terminal equipment at the generating end and the dedicated transmission lines owned by such generating stations. However, transmission/distribution licensees, as the case may be, may carry out maintenance of the dedicated transmission line, if so desired by the generating company, on mutually agreed charges.

(2) The distribution licensee or the transmission licensee or the state transmission utility, as the case may be, shall be responsible for maintenance of the terminal equipment(s) at the sub-station of the concerned licensee.

41. SLDC Charges

For sale to person other than the State Distribution Licensees or to Local Rural Grid principles of optimum scheduling and dispatch as per IEGC and State Grid Code scheme shall apply and for this purpose RE based Generating Stations and Co-generating stations shall be required to pay such fee to the SLDC as specified under UERC (Terms and Conditions of Intra-State Open Access) Regulations, 2010.

42. Connectivity and Metering arrangement for grid interactive roof top and small solar PV plants

(1) Roof-top Solar PV sources shall be allowed connectivity at the following voltage level in the distribution system of the licensee:

(i) Load upto 4 kW: low voltage single phase supply

(ii) Load >4 kW and upto 75 kW: low voltage three phase supply

(iii) Load >75 kW and upto 1.5 MW: at 11 kV

(iv) Load >1.5 MW and upto 3 MW: at 11/33 kV or as per site condition.

(2) If any dispute arises about connectivity of such sources with the grid, the matter shall be referred to the Commission whose decision in this regard shall be final.

(3) Supply of electricity to the consumer(s) from the licensee's sources and that to the licensee's distribution system from the roof-top Solar PV sources shall be measured either by two separate meters, the readings of which shall be used in each billing period for settlement on net basis or alternatively by an export-import type meter suitable for directly measuring the net exchange.

(4) The cost of switch gear, metering and protection arrangement at generator end shall have to be borne by the owner of solar generators.

43. Metering Arrangement

(1) For sale to State Distribution Licensees or Local rural Grid, RE based Generating Station and Co-generating Stations shall provide meters at the point of interconnection as defined under Regulation 3(1)(v) complying with the Regulations on installation of meters specified by CEA.

(2) For sale to person other than the State Distribution Licensees or Local Rural Grid RE based Generating Station and Co-generating Stations shall provide ABT compatible Special Energy Meters at the point of interconnection complying with the Regulation on installation of meters specified by CEA.

44. Energy Accounting and Billing

The State Load Dispatch Centre shall carry out scheduling and accounting of energy sent out by the generators and the same shall be communicated to the utilities interacting with the grid as per the scheme framed by SLDC in pursuance of the provisions of IEGC, State Grid Code and Open Access Regulations. Billing for open access transactions shall be done in accordance with the Open Access Regulations.

Provided that in case of sale to the distribution licensee of the area, the power purchase agreement may provide for joint metering and in such cases, energy accounting and billing shall be done by the generating station in association with the concerned distribution licensee.

45. Purchase of Electricity by the Generating station/Start up Power

(1) Any person, who establishes, maintains and operates a generating station and normally does not need power from the licensee round the year, may purchase electricity from a generating company or a distribution licensee in case his plant is not in a position to generate electricity to meet the requirement of his own use or for start up and consequently power is required to be drawn from distribution licensee.

(2) In case electricity generated from the plant is being exclusively sold to the State Distribution Licensee, the electricity (in kWh) procured by the Generating Station from the State Distribution Licensee to meet its requirement of his own use or for startup power, will be adjusted from the electricity sold to the Distribution Licensee on month to month basis. The Distribution Licensee shall make the payment for net energy sold to it

by the Generating Company, i.e. difference of the total energy injected into the grid and energy drawn from the grid by the Generating Company. In case the energy supplied by the distribution licensee is more than the energy injected by the generating company, the net energy (in kWh) thereof shall be billed by the distribution licensee in accordance with sub-Regulation (3) below.

(3) In case electricity generated from the plant is sold to third party other than the State Distribution Licensee, then such purchase of electricity by the generating company from the State distribution licensee, shall be charged as per the tariff determined by the Commission for temporary supply under appropriate "Rate Schedule of tariff" for Industrial Consumers considering maximum demand during the month as the contracted demand for that month. The Fixed/Demand charges for that month shall be payable for the number of days during which such supply is drawn. Such Generating Company shall, however, be exempted from payment of monthly minimum charges or monthly minimum consumption guarantee charges or any other charges.

46. Banking of Power (Applicable only in case of Captive Generating Plants & Non-fossil fuel based Co-generating Stations)

(1) The Generating Stations shall be allowed to bank power within a period of one calendar month, for the purpose of withdrawal of the banked power in the event of emergency or shut down or maintenance of the plant, subject to following conditions:

(a) Banking of energy upto 100%, as agreed between the plant and the distribution licensee, shall be allowed during the period declared by the Commission as peak hours from time to time in its Tariff Orders.

(b) Withdrawal of power shall be allowed only during the period other than the period declared by the Commission as peak hours from time to time in its Tariff Orders.

(c) The plants shall provide ABT compliant Special Energy Meters and the monthly settlement of energy sales shall be done based on Power supplied during the peak hours as per SEM meter readings shall be considered as banked power.

(d) Upon introduction of intra-state ABT in the State, the banking as well as withdrawal of banked energy shall be subject to day ahead scheduling.

(e) The power withdrawn by the plant as ascertained by SEM readings, which could not be considered as withdrawal from banked power, shall be considered as power purchased by the plant.

(f) The purchase of power by these plants under clause (e) or otherwise shall be charged as per the provisions of Regulation 45 above.

(g) A Generating Station shall be allowed to withdraw power that was banked during a particular financial year in the same year.

(h) The banked power remaining unutilized on the expiry of the financial year would be treated as sale and the financial settlement shall be made at the tariff determined by the Commission in its Tariff Order for the year during which the power was banked or at the generic tariff specified by the Commission in case of a Non-fossil fuel based Co-generating Stations. No banking charges shall be deducted from such unutilized banked energy.

(i) Banking charges shall be 12.5% of the energy banked.

(j) In case of a Non-fossil fuel based Co-generating Stations, which is not a captive generating plant, the facility of banking shall apply only if it has a PPA with the distribution licensee in the State.

47. Deemed Generation

(Applicable only in case of Small Hydro Generating Plants & Solar PV & Solar Thermal Projects)

(1) After the COD of the Project, loss of generation at the Station on account of reasons attributed to the following, or any one of the following, shall count towards Deemed Generation:

- Non availability of evacuation system beyond the Interconnection Point; and
- Receipt of backing down instructions from the SLDC.

Provided that the following shall not count towards Deemed Generation:

(i) the loss of generation at the Station on account of aforesaid factor(s) but attributed to the Force Majeure event(s);

(ii) the loss of generation at the Station due to the interruptions/outages attributed to the aforesaid factor(s) during the period in which the total duration of such outages/ interruptions, other than that excluded under above, is within the limit of

- 48 hours in a month in case of small hydro project, and
- 60 hours in a month in case of solar PV and Solar Thermal Project.

Provided further that for working out the ceiling of 60 Hrs. in a month, the interruptions/outages occurring during 18.00 hours in the evening to 6.00 hours in the morning shall not be counted.

(2) The distribution licensee shall be required to maintain the voltages at the point of interconnection with the project within the limits stipulated hereunder, with reference to declared voltage:

(i) In the case of High Voltage, +6% and -9%; and,

(ii) In the case of Extra High Voltage, +10% and -12.5%.

With effect from 01.04.2013, any loss in generation due to variations in the voltage beyond the limits specified above shall be reckoned as deemed generation provided such loss of generation results in reduction of more than 25% of capacity output.

(3) The period of outage/interruption on account of such factor(s) specified in sub-Regulation 1 and 2 above, shall be reconciled on monthly basis and the loss of generation at the Station towards Deemed Generation after accounting for the events specified under sub-Regulation 1 (i) & (ii) above, shall be computed on following considerations:

(i) The recovery on the above account shall be admissible if the actual energy generated during the year is less than the normative CUF specified in the Regulation for small hydro projects and Solar PV and solar thermal projects (in case of project opting for generic tariff) or the CUF considered for recovery of fixed charges (in case of project specific tariff is applicable) for small hydro projects and solar PV and solar thermal projects. In case the sum of actual energy generated and the deemed generation during the year exceeds the CUF at which the recovery of fixed charges has been envisaged, then the deemed generation alongwith the actual energy generated will be allowed only upto the CUF considered.

(ii) The generation loss towards the Deemed Generation in accordance with sub-Regulation (1) above, if any, during the month shall be considered on the pro-rata

basis on the number of hours lost based on the actual average generation achieved during that month divided by the total number of hours available during the month reduced by the number of hours outage/interruption occurred in the system.

(iii) The generation loss towards the Deemed Generation (in MWh) in accordance with sub-Regulation (2) above, if any, during the month shall be considered as the summation of the product of number of hours the variations in voltage beyond the specified limit existed and the Generation lost (in MW) due to the variation in the voltage beyond the specified limit. The Generation lost (in MW) would be the difference between the following:

a) Minimum of the actual generation (in MW) before the variation in voltage occurred and the generation (in MW) achieved after 90 minutes immediately after variation in voltage was restored within the specified limit would be treated as the actual generation during the period when voltage variations occurred; and

b) The generation achieved during the period when variation in voltages took place.

(4) The distribution licensee shall pay for the saleable deemed generation, on annual basis, for small hydro projects and solar PV and solar thermal projects worked out on the basis of the deemed generation on the above lines, at the generic/project specific tariffs under the provisions of RE Regulations, as amended from time to time by the Commission. The settlement of payment towards deemed generation charges shall be carried out within 3 months of the completion of the financial year.

(5) Any charges paid by the distribution licensee towards deemed generation shall not be allowed as an expense to be pass through in tariffs. The distribution licensee will have to bear such charges.

(6) The deemed generation conditions stipulated above shall be applicable only on those small hydro projects and solar PV and solar Thermal projects who have signed a long term PPA with the distribution licensee.

Further, the deemed generation conditions shall be applicable only on the small hydro projects and solar PV and solar Thermal projects where the evacuation line is connected to 11 kV or higher voltage Grid Sub-station.

48. Savings

Nothing in these regulations shall, expressly or impliedly, bar the Commission dealing with any matter or exercising any power under the Act for which no regulations have been framed, and the Commission may deal with such matters, powers and functions in a manner, as it considers just and appropriate.

49. Power to Remove Difficulties

If any difficulty arises in giving effect to these regulations, the Commission may, of its own motion or otherwise, by an order and after giving a reasonable opportunity to those likely to be affected by such order, make such provisions, not inconsistent with these regulations, as may appear to be necessary for removing the difficulty.

50. Power to Relax

The Commission, for reasons to be recorded in writing, may vary any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

By Order of the Commission

(Neeraj Sati)
Secretary
Uttarakhand Electricity Regulatory Commission

1. Levellised rate of Fixed Charges (RFC) in Rs./kWh for SHPs (upto 25 MW) Commissioned on or after 01.04.2013 (upto 25 MW)

Particulars	Upto 5 MW	Above 5 & upto 15 MW	Above 15 & upto 25 MW
Gross Tariff	4.22	4.02	3.74
Less: Accelerated Depreciation	0.30	0.30	0.30
Net Tariff	3.92	3.72	3.44

2. Levellised Rate of Fixed Charges (RFC) & Variable Charges in Rs./kWh for Biomass based Power Projects

Particulars	Rate of Fixed Charges
Gross Tariff	2.10
Less: Accelerated Depreciation	0.10
Net Tariff	2.00

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rate of Variable Charges for Year 1 as FY 2013-14 with 5% normative escalation subsequently	2.48	2.74	2.88	3.02	3.17	3.33	3.50	3.67	3.85	4.05	4.25	4.46	4.69	4.92	5.17	5.42	5.70	5.98	6.28	6.59

3. Levellised Rate of Fixed Charges (RFC) & Variable Charges in Rs./kWh for Non-fossil fuel based Co-generation Projects

Particulars	Rate of Fixed Charges
Gross Tariff	2.85
Less: Accelerated Depreciation	0.15
Net Tariff	2.70

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rate of Variable Charges for Year 1 as FY 2013-14 with 5% normative escalation subsequently	2.45	2.57	2.70	2.84	2.98	3.13	3.28	3.45	3.62	3.80	3.99	4.19	4.40	4.62	4.85	5.09	5.35	5.61	5.90	6.19

4. Levellised Rate of Fixed Charges (RFC) & Variable Charges for Biomass Gasifier Projects Commissioned on or after 01.04.2013 (in Rs./kWh)

Particulars	Rate of Fixed Charges
Gross Tariff	2.25
Less: Accelerated Depreciation	0.15
Net Tariff	2.10

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rate of Variable Charges for Year 1 as FY 2013-14 with 5% normative escalation subsequently	2.56	2.69	2.83	2.97	3.11	3.27	3.43	3.61	3.79	3.98	4.17	4.38	4.60	4.83	5.07	5.33	5.59	5.87	6.17	6.48

5. Levellised Rate of Fixed Charges (RFC) & Variable Charges for Biogas Projects Commissioned on or after 01.04.2013 (in Rs./kWh)

Particulars	Rate of Fixed Charges
Gross Tariff	3.75
Less: Accelerated Depreciation	0.25
Net Tariff	3.50

Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Rate of Variable Charges for Year 1 as FY 2013-14 with 5% normative escalation subsequently	3.55	3.72	3.91	4.10	4.31	4.52	4.75	4.99	5.24	5.50	5.78	6.06	6.37	6.69	7.02	7.37	7.74	8.13	8.53	8.96

6. Levellised rate of Fixed Charges (RFC) for Solar PV and Solar Thermal Power Projects Commissioned on or after 01.04.2013 (in Rs./kWh)

Particulars	Levellised (Entire Life) (Rs./kWh)		
	Solar PV Projects	Solar Thermal Projects	Grid Interactive Rooftop and small solar PV Plants
Gross Tariff	11.10	13.30	9.20
Less: Accelerated Depreciation	0.95	1.15	1.05
Net Tariff	10.15	12.15	8.15

7. Levellised rate of Fixed Charges (RFC) for Wind Energy based Power Projects Commissioned on or after 01.04.2013 (in Rs./kWh)

Particulars	Levellised (Entire Life) (Rs./kWh)				
	Zone1	Zone2	Zone3	Zone4	Zone5
Gross Tariff	5.45	4.85	4.15	3.35	3.10
Less: Accelerated Depreciation	0.45	0.40	0.35	0.30	0.30
Net Tariff	5.00	4.45	3.80	3.05	2.80

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

Sl. No.	Assumption Head	Sub-Head	Sub-Head(2)	Unit	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. Lakh	
			Total Equity Amount	Rs. Lakh	
		Debt Component			
			Loan Amount	Rs. Lakh	
			Moratorium Period	Years	
			Repayment Period (incld Moratorium)	Years	
			Interest Rate	%	
		Equity Component			
			Equity Amount	Rs. Lakh	
			Return on Equity for first 10 years	% p.a.	
			Return on equity 11th Year onwards	% p.a.	
			Discount rate	%	
		Deprecation			
			Depreciation Rate for first 12 years	%	
			Depreciation Rate 13 years onwards	%	
		Incentives	Generation based incentives, if any	RS L.p.a.	
			Period for GBI	years	
4	**Operation & Maintenance**	Normative O&M Expenses		Rs. Lakh/MW	
		O&M Expenses per annum		Rs. Lakh	
		Escalation factor for O&M expenses		%	
5	**Working Capital**	O&M expenses		Months	
		Maintenance Spare	% of O&M expenses)	%	
		Receivables		Months	
		Interest on working capital		%p.a.	

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

Sl.No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Values
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Auxiliary Consumption factor	%	
			PLF (during stabilization upto 6 months)	%	
			PLF (during 1st year after stabilization)	%	
			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. Lakh	
			Total Equity Amount	Rs. Lakh	
		Debt Component			
			Loan Amount	Rs. Lakh	
			Moratorium Period	Year	
			Repayment Period (incld Moratorium)	Year	
			Interest Rate	%	
		Equity Component			
			Equity Amount	Rs. Lakh	
			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 13 years 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 expenses)	%	
		Receivables		Months	
		Biomass stock		Months	
		Interest on working capital		% p.a.	
6	Fuel related assumptions	Station Heat Rate			
			During stabilization	Kcal/kWh	
			Post stabilization	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	
			Fossil fuel price (coal) : yr-1	Rs./MT	
			Fuel price escalation factor	% p.a.	

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

		Year																																	
Unit Generation	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Installed Capacity	MW																																			
Net Generation	MU																																			

		Year																																		
Unit Generation	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M Expenses	Rs. Lakh																																			
Deprecation	Rs. Lakh																																			
Interest on term loan	Rs. Lakh																																			
Interest on working Capital	Rs. Lakh																																			
Return on Equity	Rs. Lakh																																			
Total Fixed Cost	**Rs. Lakh**																																			

		Year																																		
Per Unit Tariff Components	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
PU O&M Expenses	Rs./kWh																																			
PU Deprecation	Rs./kWh																																			
PU Interest on term loan	Rs./kWh																																			
PU Interest on working Capital	Rs./kWh																																			
PU Return on Equity	Rs./kWh																																			
Total Fixed PU Components	**Rs./kWh**																																			

		Year																																		
Levelised Tariff	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Discount Factor																																				
Discount Tariff Components	Rs./kWh																																			
Levelised Tariff	Rs./kWh																																			

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

		Year																																	
Unit Generation	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Installed Capacity	MW																																			
Net Generation	MU																																			

		Year																																		
Tariff Components (Fixed charge)	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M Expenses	Rs. Lakh																																			
Deprecation	Rs. Lakh																																			
Interest on term loan	Rs. Lakh																																			
Interest on working Capital	Rs. Lakh																																			
Return on Equity	Rs. Lakh																																			
Total Fixed Cost	**Rs. Lakh**																																			

		Year																																		
Tariff Components (Variable charge)	**Unit**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
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 Cost	**Rs. Lakh**																																			

		Year																																		
Per Unit Tariff (Components)	**Unit**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
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 Total Fixed Components (Fixed)	**Rs./kWh**																																			
PU Total Fixed Components (Variable)	**Rs./kWh**																																			
PU Total Fixed Components (Total)	**Rs./kWh**																																			

		Year																																		
Levelised Tariff	**Unit**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**	**34**	**35**
Discount Factors	Rs./kWh																																			
Discount Tariff Components (fixed)	Rs./kWh																																			
Discount Tariff Components (variable)	Rs./kWh																																			
Discount Tariff Components (total)	Rs./kWh																																			
Levelised Tariff (fixed)	**Rs./kWh**																																			
Levelised Tariff (variable)	**Rs./kWh**																																			
Levelised Tariff (total)	**Rs./kWh**																																			