

**GUJARAT ELECTRICITY REGULATORY COMMISSION**  
**Ahmedabad**

**Order No.5 of 2010**

In the matter of : “Determination of tariff for Procurement of Power by Distribution Licensees from Biomass based Power Generator and Other Commercial Issues”.

In exercise of the powers conferred under sections 61(h), 62(1)(a) and 86(1)(e) of the Electricity Act, 2003 (36 of 2003) and all other powers enabling it in this behalf, the Gujarat Electricity Regulatory Commission (hereinafter referred to as “the Commission”) determines the tariff for procurement of power by Distribution Licensees and Others in Gujarat from Biomass based Power Generator.

This order is the second order on Biomass based power generation. This order is culmination of an elaborate consultative process after considering the suggestions received from various stakeholders.

**1. Background**

- 1.1 Discussion paper on determination of tariff for Procurement of Power by Distribution Licensees from Biomass based Power Generators
- 1.2 Public Hearing



### **1.1 Discussion paper on determination of tariff for Procurement of Power by Distribution Licensees from Biomass based Power Generators**

The Commission prepared a discussion paper on “Determination of Tariff for Procurement of Power by Distribution Licensees from Biomass based power projects and other Commercial Issues”, and placed it on the website of the Commission on 10.2.2010 for inviting comments and suggestions. The list of those who have communicated their views is given in **Annexure-I**.

### **1.2 Public Hearing**

A public hearing was held on 29.3.2010. The list of the participants who participated in the hearing and expressed their views is given in **Annexure-II**.

## **2. General Approach**

### **2.1 Commission’s Regulations on Procurement of Power from Renewable Energy Sources**

The Commission had notified Regulation No.15 titled the “Gujarat Electricity Regulatory Commission (Power Procurement from Renewable Sources) Regulations, 2005” on 29<sup>th</sup> October, 2005. By the said Regulations, the Commission fixed the Renewable Power Purchase Obligations (RPPO) of the Distribution Licensees for the years 2006-07, 2007-08 and 2008-09. For the subsequent period, the Commission prepared a draft regulation viz. “The Gujarat Electricity Regulatory Commission (Power Procurement from Renewable Sources) Regulations, 2009 and issued Public Notice inviting comments/suggestions from the stakeholders. In the said draft regulations, the Commission proposed a higher percentage of power purchase obligation by Distribution licensees and it was also proposed to extend the scope of applicability of these



regulations to captive and open access user(s)/ consumer(s). This draft regulation was challenged by some of the stakeholders before the Hon'ble High Court of Gujarat and the Hon'ble High Court of Gujarat disposed of the petition on 9.11.2009 by vacating the interim stay which had been granted earlier. Thereafter the Commission came out with a new draft Regulations on Power Procurement from Renewable Energy Sources in January 2010. Public Hearing of the above Regulations was held on 4.3.2010. The Commission has notified the regulations for procurement of energy from renewable sources, vide notification no. 3 of 2010 dated 17<sup>th</sup> April, 2010.

## **2.2 Control period**

The Commission had, vide its Order No.2 of 2007 dated 17th August, 2007, determined the Biomass based power generation Tariff for a period of three years, i.e. upto 16<sup>th</sup> August, 2010.

The discussion paper for the present order was published on 6.2.2010 and it was proposed to be effective from the date of the present order.

*The control period of the Commission's previous order no.2 is up to 16<sup>th</sup> August, 2010. However, since then there is substantial increase in capital cost of the projects and the developers have shown serious concern about viability of projects at the tariff determined in the above order. Hence, the Commission decides to shorten the control period of the previous order and to make the present order effective from 1.06.2010 to 31.03.2013.*



### **2.3 Process of Determination of Tariff**

The Commission has determined the Biomass based power generation tariff based on broad principles contained in Commission's regulations on "Terms & Conditions of Tariff" and "Procurement of Power from Renewable Energy Sources by the Distribution Licensees". The Commission has also considered provisions of the CERC (Terms & Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2009 notified on 16<sup>th</sup> September, 2009 and CERC suo-moto order dated 26<sup>th</sup> April 2010 in petition No. 53/2010 (Suo-moto). Prior to final decision on the tariff, the Commission invited comments/suggestions from the stakeholders and also held public hearing and considered the suggestions of various stakeholders.

### **2.4 Preferential Tariff**

Clauses 6.4(1) of the Tariff Policy provides that the State Electricity Regulatory Commissions shall fix a minimum percentage of power purchase from non-conventional energy sources taking into account availability of such resources in the region and determine the preferential tariff for non-conventional energy sources. Distribution companies may procure such energy at preferential tariff determined by the State Commission till such time as the non-conventional technologies become competitive. The Working Group constituted by the Forum of Regulators (FOR) for Policies on Renewable have in their recommendation suggested that a cost-plus tariff based on reasonable norms should be adopted for Renewable Energy (RE).

Keeping in view provisions of the Tariff Policy, recommendations of the Working Group of FOR, and the larger objectives with reference to climate

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change and global warming, the Commission has adopted an approach of preferential treatment to energy from renewable sources.

### **3. Technology Norms**

It was proposed in the discussion paper that the tariff shall be applicable to Biomass power projects based on Rankine cycle technology using water cooled condenser and biomass fuel sources either fed directly or in palletized form.

### **Suggestions of the Objectors**

Shri Ankur Jain , on behalf of Ankur Scientific Energy Technology Pvt.Ltd. suggested that Bio-gassification project and Anaerobic Fermentation technology should also be included for qualifying this tariff order.

### **Commission's Decision**

The technology as well as plant and equipment for the three types of biomass based power projects (i.e. Rankine Cycle, Gassifiers or Anaerobic Fermentation technology based) are distinct and different from each other. However, it is felt that the promotional tariff should not differentiate between various technologies. As such, the Commission decides that the tariff determined under this order shall be applicable to all the three types of Biomass based generating plants.

### **4. Components of Tariff**

While determining the biomass based power generation tariff, it is essential to adopt financial and operational parameters. In the context of tariff determined



on a cost-plus basis, it significantly depends on the following financial and operational parameters:

- 4.1 Capital cost
- 4.2 Evacuation Cost
- 4.3 Tenure of Loan
- 4.4 Interest on loan
- 4.5 Return on Equity
- 4.6 Life of plant and machinery and agreement period.
- 4.7 Depreciation
- 4.8 Debt-Equity Ratio
- 4.9 Operations and Maintenance expenses
- 4.10 Interest on Working Capital
- 4.11 Plant Load Factor (PLF)
- 4.12 Auxiliary Energy Consumption
- 4.13 Station Heat Rate (SHR)
- 4.14 Fuel Related Assumptions
  - a) Fuel Mix and types.
  - b) Gross Calorific Value (GCV)
  - c) Price of fuel.

#### **4.1 Capital Cost**

The capital cost of biomass based power plant comprises the cost of (i) boiler, (ii) turbine generators, (iii) condenser, (iv) control cabinets, (v) chimney for flue gases, (vi) transformer and associated equipments, (viii) land and its development (ix) processing fee of Gujarat Energy Development Agency, (x) erection and commissioning charges, and (xi) creation of transmission system upto interconnection point of State Transmission Utility. The above components are grouped into four important categories, i.e. (i) Plant and Machinery, (i) Land Cost, (iii) Evacuation Infrastructure and (iv) Associated service charges.



In the discussion paper, the Commission had analysed the capital costs considered by various other State Commissions, the CERC and the expert committee constituted by the CEA. Based on above analysis, the Commission proposed the capital cost of Rs.4.25 crores/MW for the control period of the order. This capital cost did not include the evacuation cost.

### **Suggestions of the Objectors**

M/s.Abellon Clean Energy Limited and Bio Energy Council of India have suggested that the capital cost for water cooled condenser based biomass based project may be considered at Rs.4.5 crores/MW and additional Rs.30 lakh/MW allowed for aircooled condenser based projects. They submitted that RERC has considered capital cost of Rs.5.4 crores/MW for the plants commissioned in the year 2010-11. M/s.Amreli Power Projects Pvt.Ltd., M/s.Junagadh Power Projects Private Ltd., M/s.Bhavnagar Biomass Power Projects Pvt.Ltd., and M/s.Ind-Bharath Power Infra Pvt.Ltd. have suggested that capital cost for water cooled condenser based plant allowed at Rs.4.5 crores/MW and Rs.35 lakhs /MW may be allowed additionally for aircooled condenser plant. GETCO has suggested capital cost to be considered at Rs.4 crores/MW and GUVNL suggested that capital cost may be considered as Rs.4.25 crores/MW including evacuation cost.

### **Commission's Decision**

It is observed that diverse views have been expressed by various stakeholders. Several objectors have suggested that the capital cost considered by the Commission is inadequate and it should be fixed in the range of Rs. 4.5 crore to Rs. 5.4 crore per MW, while the others have objected to further increase in the capital cost over Rs. 3.5 crore/MW considered by the Commission in the earlier



order No. 2 of 2007. Cost of Rs.3.5 crores adopted by the Commission in its earlier order of 2007, comprised of Rs.3.25 crores/ MW as the capital cost and 0.25 crores/ MW as cost of evacuation. As against this, the Commission now proposes Rs.4.25 Cr/ MW as capital cost of generating facility, which is substantially higher than previous figure of Rs.3.25 Cr/MW. The CERC has, in its order dated 26<sup>th</sup> April,2010 in Petition No.53/2010 (suo motu), adopted capital cost of Rs.4.025 crore/MW for FY 2010-11. No separate provision for evacuation cost has been made by the CERC. Some of objectors have suggested higher cost for air cooled condenser based power plant, but the Commission feels that while determining the preferential tariff, different norms for various types of projects is not desirable. As such, the capital cost of Rs. 4.25 crores/MW for the control period comprising the next three years is a just proposition.

#### **4.2 Evacuation Cost**

Section 86(1) (e) of the Electricity Act, 2003 stipulates that the State Commission should take suitable measures for providing grid connectivity to the renewable energy sources. The Working Group constituted by the Forum of Regulators has also in its report on “Renewable Policy” recommended that grid connectivity be provided by the transmission and distribution licensees for renewable energy sources in an optimal manner. The size of biomass plant is in the range of 1 to 25 MW, which is quite small in comparison with conventional power plant. Hence, power generated from such plants can be evacuated through 11 KV, 33 KV or 66 KV lines. The Commission had in its Order No.2 of 2007 dated 17.8.2007 allowed Rs25 lakhs per MW as development charge including grid interface charges for evacuation arrangements. Considering the overall price





escalation, the discussion paper proposed evacuation cost to Rs.29.00 lakhs per MW for biomass based power generation for the next three years.

### **Suggestions from Objectors**

M/s.Abellon Clean Energy Ltd. suggested that evacuation cost be allowed at Rs.45 lakhs/MW as GETCO had issued estimate of Rs.43.15 lakhs per MW for evacuation of power from their plant. It was also suggested that the 15% supervision charge, levied by GETCO on such lines, should also be allowed to project developer over and above evacuation cost. GETCO has suggested evacuation cost be allowed only at Rs.20 lakhs/MW.

### **Commission's Decision**

The Commission had in its previous order considered Rs. 25 lakhs/MW as evacuation cost which is now enhanced to Rs. 29 lakhs/MW, to address the increase in cost of material, labour cost etc. The cost of Rs. 45 lakhs/MW is too high a cost and there is no justification for the same. The size of biomass based project is small, up to 25MW. The Power generated from such plant will be required to evacuate either on 66 KV or below voltage level. Moreover, it is pointed out by GETCO that the 66 KV sub-stations are located within a distance of 25 Kms from each other. Hence, the transmission lines required to be erected shall not be very long. As such, the Commission decides to adopt Rs.29 lakh/MW as the evacuation cost, including supervision charges of GETCO, if any.

### **4.3 Tenure of Loan**

The Commission in its earlier order dated. 17<sup>th</sup> August, 2007 had considered the loan tenure as 10 years with repayment in equal installments. The



CERC also in its order dated 26<sup>th</sup> April 2010 adopted normative loan tenure of 10 years. The Commission therefore decides to continue the tenure of term loan as ten years with repayment in equal installments.

#### **4.4 Interest on Loan**

The Commission had considered the prevailing prime lending Rates of the banks/ financial institutions on such projects in the market and in line with Commission's approach in case of Wind and Solar Power Tariffs, the Commission proposed interest on loan at 10.75% for the discussion paper. This is equal to the SBI PLR minus 1 (one) percent.

#### **Suggestions of Objectors:**

M/s. Abellon Clean Energy Limited suggested that interest on loan be allowed @ SBI LTPLR plus 150 basis point as considered by CERC. The RERC had considered interest on loan @ 12.86% per annum and MPERC had considered interest rate at SBI LTPLR +1%. M/s. Abellon submitted that IREDA is granting loan @ 11.75% for grade II companies. M/s. Amreli Power Projects and Others have suggested to keep interest on loan @ 14% as IREDA is charging interest rate @ 13.15% with an additional 1% during the construction period and PTC is charging interest @ 13.5%. UCO bank is charging BPLR + 3.5%.

#### **Commission's Decision**

The interests on loan proposed by the objectors are varying from 11.75% to 15.25% The Commission had proposed interest on loan as 10.75% which is in line with wind and solar tariff order and the same is equal to SBI PLR minus 1%. The interest on loan depends on various factors including perceived market risks,



credit rating of the project developers etc. The Commission feels that the tariff is a promotional tariff with assured returns and the distribution licensees are under obligation to purchase power from renewable sources resulting in no market risks. However, it has been submitted by the project developers that unlike the solar or wind project developers, the Bio-mass project developers are smaller SPVs and are not able to get loan at rates below PLR. The Commission, therefore, decides to allow the interest on loan at SBI PLR, viz. 11.75%.

#### **4.5 Return on Equity**

The Commission had proposed a rate of return on equity at 14% with proposal to allow MAT @ 16.995% per annum for the initial 10 years of the project from commercial operation date of the plant and Corporate Tax @ 33.99% from the 11<sup>th</sup> year to 20<sup>th</sup> year of the plant on the Return on Equity.

#### **Suggestions of the Objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have suggested to consider RoE at 19% (pre-tax) during the first 10 years and 24% (pre-tax) thereafter as per CERC notification. MERC and RERC have allowed higher return on equity @ 16% pre-tax. M/s. Amreli Power Projects Pvt Ltd and others have suggested to consider RoE at 16% post-tax as biomass developers takes risk with respect to price of biomass and its seasonal nature. The Tariff Policy provides that a preferential tariff should be allowed to renewable energy sources. Hence, the Commission may allow preferential tariff with 16% post-tax RoE. They have suggested that MAT has been increased to 18% from the year



2010-11. Accordingly the necessary provisions made for Income-tax by the Commission.

### **Commission's Decision**

Commission's regulations on terms and conditions of tariff provide RoE at 14%. Thus, the RoE proposed by the Commission is in accordance with the Regulations notified by the Commission. The Commission, therefore, decides to retain the RoE @ 14% per annum with provision of MAT for initial 10 years and Corporate Tax for subsequent period at appropriate rates.

#### **4.6 Life of Plant and Machinery and Agreement Period**

As proposed in the discussion paper, the Commission decides to adopt a plant life of 20 years for this order. The power plants established on or after the date of this order and fulfilling the criteria laid down in this order are eligible for the tariff determined by the Commission.

The biomass based power generation project developers/ Distribution Licensees who are willing to supply/ purchase power shall sign a Power Purchase Agreement (PPA) for a period of 20 years.

#### **4.7 Depreciation**

Depreciation provision provides cash flow and thereby helps loan repayment. The loan repayment period is considered by the Commission as 10 years. Hence, the requirement of cash flow in the initial 10 years is more to match with the loan repayment. The Commission, therefore, proposed to allow 6% of the



capital cost per annum as depreciation for initial 10 years and 3% per annum from 11<sup>th</sup> to 20<sup>th</sup> year of the plant.

The provisions of Accelerated Depreciation are provided in the Income Tax Act, 1961 and Rules framed thereunder. A person who qualifies under the above statutory provisions is entitled to get benefits of the Accelerated Depreciation. Hence, the Commission proposed to determine the tariff taking into account the benefit of accelerated depreciation available under Income Tax Act, 1961 and Rules framed under it.

### **Suggestions of the objectors**

M/s. Amreli Power Projects Limited, Junagadh Power Projects Limited, Bhavnagar Biomass Projects Pvt. Limited, Ind-Bharath Power Infra Pvt. Ltd have suggested that there is no provision of accelerated depreciation in the Income-Tax. Depreciation allowed for the purpose of income-tax may be relevant only for determination of tax liability and not relevant or material to the determination of tariff. Depreciation be allowed for the purpose of tariff determination matching with loan repayment requirement at 17% of capital cost over 10 years. Hence, depreciation rate may be allowed @ 7% per year for the initial 10 years and for the remaining 10 years, the depreciation rate may be allowed @ 3% per annum. It was also proposed by some stakeholders that separate tariff may be specified for the projects availing accelerated depreciation benefit and those not availing this benefit.



## **Commission's Decision**

The Terms and Conditions of the Tariff Regulations, 2005 notified by the Commission provides that depreciation should be calculated on straight line method for 90% of assets leaving the salvage value as 10%. Accordingly the depreciation rate works out to be 4.5% per annum. However, the Commission has allowed depreciation rate @ 6% per annum for initial 10 years and 3% for the 11<sup>th</sup> year onwards which provides comfort to the project developers to fulfill the loan repayment requirement to a large extent. Based on the above observation, we decide to retain the depreciation rate at 6% for initial 10 years and 3% from 11<sup>th</sup> year onwards.

The Commission also recognizes the apprehension regarding applicability of accelerated depreciation and decides to determine different tariffs for projects availing accelerated depreciation and those not availing this facility.

## **4.8 Debt-Equity Ratio**

In line with Clause 5.3(b) of the Tariff Policy (TP) notified by the Ministry of Power, Government of India the Commission decides to adopt a debt-equity ratio of 70:30 for Biomass based power projects.

## **4.9 Operations & Maintenance expenses**

Operation and Maintenance (O & M) costs consist of statutory charges, spares, employee cost, administrative and general expenses, repairs and maintenance and insurance expenses.

The CERC in its order dated 26<sup>th</sup> April, 2010 adopted O&M expenses as Rs.21.41 lakhs per MW for FY 2010-11 to be escalated at the rate of 5.72% per



annum thereafter. Various State ERCs have considered O&M expenses varying between 3.0 to 4.0% of the capital cost for the first year with annual escalation @ 4 to 5% thereafter.

Based on above observations, the Commission had proposed O&M cost including insurance cost at the rate of 5% of the capital cost for the first year, to be escalated a 5% per annum thereafter.

### **Suggestions of the Objectors**

M/s. Abellon Clean Energy Limited suggested that O&M cost including insurance cost should be allowed at 7% of capital cost with escalation @ 5.72% per annum. Moreover, water charges of Rs.5 lacs per MW with escalation @10% per annum on it should be allowed.

GUVNL suggested that O&M cost including insurance cost should be allowed @ 4% of capital cost with escalation @ 4.46% p.a. Various ERCs have allowed escalation in the range of 3-4%.

### **Commission's Decision**

Based on the analysis furnished in the discussion paper, O&M cost @ 5% with an escalation @5% p.a. appears to be fair. This works out to Rs.22.7 lakh/MW as against Rs.20.25 lakh/MW adopted by the CERC. These rates will enable the developers to maintain the plant in proper condition during the life span of the plant. The escalation rate on the above at 5% per annum after the first year will provide sufficient amount to address the inflation aspect. So far as water charges and escalation on it are concerned, it is a part of operation and maintenance expenses. Hence, no separate charges are allowed on this ground. Based on above,



we decide to retain the O&M expenses @ 5% of the capital cost for first year with escalation @ 5% per annum thereafter.

#### **4.10 Interest on Working Capital**

Biomass in Gujarat consists of agriculture and forestry residues and prosopis, which are seasonal. The fuel storage requirement depends on factors such as types of fuel, its availability on a continuous basis round the year, the availability of storage facilities, procurement arrangements, the price during season/ off-season etc.

Therefore, the Commission had considered the interest on working capital based on:

- i) fuel stock for 30 days.
- ii) O&M expenses for one month,
- iii) Receivables equivalent to one month charges for sale of electricity and
- iv) Maintenance spare at 1% of the capital cost escalated @ 5% per annum.

The Commission had proposed to allow interest on working capital at the rate of 11.75% as considered for similar cases.

#### **Suggestions of the objectors**

M/s. Abellon Clean Energy Limited suggested that working capital be allowed on (i) fuel cost for four months equivalent for normative PLF (ii) O&M expenses for one month (iii) receivables equivalent to 2 months on fixed and variable charges calculated for sale of electricity (iv) maintenance spares at 15% of the O&M expenses. They have suggested to allow interest on working capital





@ 13.79% as per CERC regulations. The MPERC has considered interest rate at 13.75% and RERC has considered it equivalent to SBI LTPLR. M/s. Amreli Power Company Ltd. and others have suggested to allow interest on working capital at 15% per annum with consideration of fuel stock for 3 months because the Biomass fuel is available on seasonal basis and is required to be stocked for a longer period for operation of the plant. GUVNL has suggested that maintenance of spare allowed at 15% of O&M expenses instead of 1% of capital cost.

### **Commission's Decision**

The Commission had proposed interest on working capital for (i) fuel stock for 30 days, (ii) O&M expenses for one month, (iii) receivables equivalent to one month charges and (iv) maintenance spare @ 1% on capital cost with escalation @5% p.a. after first year. The fuel cost & receivables equivalent for one month provide necessary cash flow which will be incurred by project developer during the month of operation. Moreover, the maintenance spare @1% of capital cost is in line with the working capital allowed for conventional power plants as per the tariff regulations notified by the Commission. It is an admitted fact that Biomass available during the whole year is not the same. Its availability may vary from season to season. However, in view of large volume of biomass requirement, storage of fuel for larger periods may not be practicable. Moreover, by arranging biomass fuel from various sources, one month's stock may be adequate for normal operation of the plant. Regarding quantum of receivables to be included in the working capital, it is felt that with monthly billing cycles, revenue for one month is adequate. So far as maintenance spare @ 15% of O&M cost are concerned, it is clarified that the type of technology employed in the Biomass plant is similar to conventional power plant. Therefore, the maintenance spare requirement would be



same as the conventional power plant. Hence, the provision made for maintenance spare is not required to be different. Based on the above consideration, it is decided to retain the working capital requirement as per the discussion paper. Regarding the rate of interest, the discussion paper had proposed a rate of 11.75% which is equal to SBI PLR, and the Commission decides to retain the same.

#### **4.11 Plant Load Factor (PLF)**

The Plant Load Factor (PLF) is a critical performance parameter for any power plant. It depends on factors such as reliable and quality fuel supply, plant availability etc.

CERC in its order dated 3.12.2009 in Petition No.284 of 2009 considered the Plant Load Factor as under:

During stabilization	=	60%
During the first year after stabilization	=	70%
From second year onwards	=	80%

The PLF considered by various Commissions varies from 60% to 70% during stabilization period and 75% to 80% after stabilization.

The CEA in its report on “Operation Norms for Biomass based Power Plant” of September, 2005 recommended Plant Load Factor (PLF) as 80 % for recovery of the full fixed cost. The Commission had in its order No.2 of 2007 considered PLF as 80%.



The Commission had recognized that biomass projects require some time for stabilization of its operation in the initial period. Once the plant stabilizes, it requires operating at the optimal level. In view of the small size of Biomass based plants, stabilization period of one year is considered adequate.

Considering the above, the Commission proposes the PLF for the Biomass Power Project as stated below:

During 1 <sup>st</sup> year which covers stabilization	=	70%
From 2 <sup>nd</sup> year onwards	=	80%

### **Suggestions of the objectors**

GETCO suggested that the Commission may consider the PLF as provided in the CERC regulations/orders. GUVNL has suggested to consider PLF 85%.

### **Commission's Decision**

Since no objection/ suggestions were received from the project developers, the Commission decides to retain the clause as provided in the discussion paper.

### **4.12 Auxiliary Energy Consumption**

Based on the analysis of figures adopted by various Commissions, the Commission, in the discussion paper, had proposed Auxiliary Consumption at 10% for determination of tariff for biomass based power projects.

### **Suggestions of the objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have suggested for allowing auxiliary consumption at 12.50% for the tariff



determination because additional 2.5% of energy is consumed by pre-processing equipment. It was stated that for each tonne of Biomass to be processed 25 units is spent in shredding, drying and sand separation processes.

### **Commission's Decision**

The Commission has considered auxiliary consumption as adopted by various ERCs for biomass based power projects which is generally between 9 to 10%. The CERC has also considered auxiliary consumption at 10% for such plants. Auxiliary consumption comprises all types of energy consumption by the auxiliary units of the plant. Hence, the proposed consumption towards shredding, drying and sand separation processes are included in the auxiliary consumption. As such, the Commission decides to retain the auxiliary consumption at 10%.

### **4.13 Station Heat Rate (SHR)**

Station Heat Rate (SHR) is a key performance parameter for a power plant. The SHR depends on several factors such as plant capacity, plant design and configuration, technology (boiler type and pressure levels etc.), plant operations and maintenance practices, and operational parameters under varying load conditions.

The SHR considered by various Commissions except RERC in their Regulations / Order is varying between 3600 to 3840 Kcal/Kwh. RERC has considered SHR as 4200 for water cooled and 4400 for Air cooled biomass plant.



The CERC, in its order dated 3<sup>rd</sup> December, 2009 in Suo-Motu Petition No.284 of 2009 considered normative Station Heat Rate of 3800 Kcal/Kwh for computation of tariff for biomass based power generation. The Commission also proposed to adopt the same.

### **Suggestions of the objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have suggested that SHR should be considered as 4290 Kcal per Kwh as per the earlier order of the Commission.

### **Commission's Decision**

The Commission had proposed the SHR at 3800 Kcal per Kwh which is in line with the CERC orders. Other ERCs have also considered the SHR ranging between 3600 to 3850 Kcal per Kwh except RERC. While determining the SHR it is essential to keep in mind that the plant operates efficiently and at the same time the consumers are not burdened with inefficient operation of plant. As such, the Commission decides to retain the SHR as 3800 Kcal per Kwh.

## **4.14 Fuel Related Assumptions**

### **(a) Fuel Mix and Types**

As provided in the guidelines issued by the Ministry of New and Renewable Energy, the Commission proposed to allow use of fossil fuel upto 15% of total energy consumption in kCal on annual basis.



## **Suggestion of the Objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have suggested to allow fossil fuel mix upto 20% in the power projects. GUVNL has suggested to allow fossil fuel mix of 25% in the biomass based projects.

## **Commission's Decision**

As explained in the discussion paper, in accordance with the guidelines issued by the Ministry of New and Renewable Energy, mixing of only 15% of fossil fuel is allowed for a project to qualify as non-conventional generation project. As such, proposal to increase the permissible mix to 20 to 25% cannot be accepted.

### **(b) Gross Calorific Value (GCV)**

The Gross Calorific Value (GCV) is the heat produced in kCal by complete combustion of one Kg of fuel. There are various types of biomass available from agricultural and forestry residues like Paddy, Wheat, Mustard, Bajara, Maize, Cotton, Groundnut, Coffee, Coconut, Jowar, Gram, Soyabean, Sunflower etc. in various states of the country. Each type of biomass has different Gross Calorific Value (GCV) and its quantum also varies from state to state. Hence, it is appropriate to consider weighted average calorific value of the various types of biomass fuel sources.

Various SERCs in their orders have considered GCV varying from 3100 to 3400 Kcal/kg, whereas the CERC has in its order dated 26<sup>th</sup> April, 2010 considered the GCV of biomass for states other than those specified in the order, which is applicable to Gujarat as 3467 Kcal/kg.



On enquiry with GEDA, it was informed that weighted average GCV of Biomass available in the State of Gujarat is about 3300 Kcal/ kg.

Based on above, the Commission had considered the Gross Calorific Value of biomass at 3300 kCal/kg. for determination of tariff of biomass based power generation.

### **Suggestions of the objectors**

The GETCO has suggested considering gross calorific value of biomass as 3467 Kcal per kg. as per CERC Regulations/Order. The GUVNL has also suggested considering GCV as 3500 Kcal per kg. as 81% of biomass stuff available is from cotton stalk with GCV of around 3636 Kcal per kg.

### **Commission's Decision**

GEDA is the nodal agency to oversee the development of renewable and non-conventional energy sources in the state of Gujarat and the Commission feels that the weighted average GCV of biomass available in Gujarat, as furnished by GEDA, should be adopted for this order. Accordingly, the Commission decides to adopt GCV of biomass as 3300 Kcal/kg.

#### **(c) Price of Fuel**

The price of biomass fuel depends on various components such as remuneration to farmers, cost of biomass to forest Department/ State Government, cost related to collection and storage, transportation, loading and unloading cost, agent's commission etc. The fuel procurement and transportation are handled by a highly unorganized sector and thus the prices are influenced by the local factors.



Based on the inputs received from GEDA , the Commission had proposed biomass fuel cost at Rs. 1500/ MT( including transportation cost) with escalation of 5% per annum and fossil fuel cost of coal Rs. 1775/MT with escalation of 5% per annum thereafter.

### **Suggestions of the objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have suggested that fuel cost for biomass projects should be considered at Rs.2200 per MT with 5% escalation per annum. The Amreli Power Projects Pvt Ltd and Others have suggested that the main fuels available in Gujarat are groundnut shells, Juliflora and cotton stalks. Cotton stalk is available at Rs. 1500/MT, groundnut at Rs. 2000/MT to Rs. 2500/ MT and Juliflora at Rs. 2000/ MT. It is difficult to receive any of the above continuously for the whole year. Hence, the average cost of biomass at Rs.2000 per MT with annual escalation should be allowed by the Commission. Some of the stakeholders have submitted that the Bio-mass fuel has to be collected from wide spread areas through unorganized sector, and hence suitable provision for transportation/handling of the fuel has to be made.

### **Commission's Decision**

The objectors have suggested to consider fuel cost ranging from Rs. 2000/ MT to Rs. 2500/ MT. There is no reliable data regarding fuel cost available as the market of biomass is unorganized. The cost at 1500 per MT with 5% escalation on it after the first year of operation of biomass as suggested by GEDA, the nodal





agency that oversees the development of renewable and non conventional energy sources in the state is considered appropriate by the Commission. However, as submitted by some of the stakeholders, the Commission decides to allow, an amount of Rs. 100 per MT towards transportation/handling charges. The Commission thus allows the cost of Bio-mass fuel at Rs. 1600 per MT with 5% escalations per year.

## **5. Tariff for Biomass based power projects**

Based on the parameters as described in the discussion paper, the levelised tariff including RoE of biomass based power generation using a discounting rate of 10.19% worked out to Rs.4.36 per Kwh.

However, the Commission felt that it would be appropriate to determine tariff for two sub-periods: one tariff for the initial 10 years and another tariff from 11<sup>th</sup> year onward upto 20<sup>th</sup> year. Hence, the Commission proposed tariff for generation of electricity from biomass based power projects at Rs.4.25 per Kwh for the initial 10(ten) years starting from the date of Commercial operation of the project and Rs. 4.50 per Kwh from the 11<sup>th</sup> (Eleventh) year to 20<sup>th</sup> (twentieth) year.

The above tariff was proposed after taking into account benefit of accelerated depreciation under the Income Tax Act and Rules. It was proposed that for a project that does not get such benefit, separate tariff would be determined by the Commission, on a specific petition by the developers.



### **Suggestion of the objectors**

M/s. Abellon Clear Energy Limited suggested that the Commission may decide the tariff for 15 years as decided by CERC. They suggested the tariff for the base year is Rs. 5.72/Kwh and same is escalated as suggested by CERC upto 15<sup>th</sup> year which works out to Rs. 8.32 /Kwh. RERC and MERC have declared the tariff for Biomass based project @ Rs.4.44/ Kwh and Rs.4.98/ Kwh respectively under Levelised tariff and cost plus approach.

M/s. Amreli Power Company Ltd. and others have suggested that tariff should be allowed on two part basis i.e. fixed and variable charges separately and such tariff should be determined for a period of 5 years only. Thereafter the same may be required to be reviewed because the biomass prices are uncertain. They further submitted that during the last 2 or 3 years, the fuel prices have been higher than the tariff available to the project developers. GUVNL has also suggested to calculate tariff on year - to - year basis with two separate components. The utilities may be allowed to pay the tariff on a year - to - year basis. The discount factor is to be considered as 16.95% instead of 10.19%.

Ankur Scientific Energy Technologies Pvt. Ltd. suggested that the tariff should have higher per Kwh for power plants smaller than 2MW, because the capital cost, interest costs, Operation & Maintenance expenses are higher than for a larger plant.



## Commission's Decision

As discussed in Clause 4 above, for determination of tariff for Bio-mass based generation projects, the Commission decides to adopt various parameters as under:

### Parameters for Determination of Tariff

No	Parameter (per MW basis)	17 <sup>th</sup> August 2007 Order	Considered for the present order
<b>Project Cost</b>			
1	Land+ Plant & Machinery + Erection cost (Rs.in lakhs)	3.25	4.25
2	Evacuation Infrastructure	25	29
	Less: Capital Financial Assistance for Biomass Gasifier Programme Scheme of MNRE	1.5	Nil
	Total Capex (Rs. in lakhs)	200	454
<b>Operational parameters</b>			
3	Debt-Equity ratio	70:30	70:30
4	Interest on Loan (tenure 10 years)	12.00%	11.75%
5	Return on Equity	14%	14%
6	O&M cost (% of project cost- including Insurance cost)	7%	5%
7	Escalation on O&M	5%	5%
8	PLF (at 100% grid & m/c availability)	80%	70% for 1 <sup>st</sup> year & 80% from 2 <sup>nd</sup> year onwards.
9	Actual machine availability	100%	100%
10	Actual grid availability	100%	100%
11	Depreciation	4.5%	6% for initial 10 <sup>th</sup> year and 3% from 11 <sup>th</sup> to 20 <sup>th</sup> year of the plant.
12	Project life (years)	20	20
13	Minimum Alternate Tax (MAT) for initial 10 years of the plant	11.33%	16.995%
14	Corporate Income Tax from 11 <sup>th</sup> year to 20 <sup>th</sup> year.	33.66%	33.99%
15.	Interest on Working Capital	10.75%	11.75%
	(i) Fuel cost for one month		



	(ii) O&M expenses for one month		
	(iii) Receivables equivalent to one month charges for sale of electricity calculated and		
	(iv) Maintenance spare at 1% of the capital cost escalated @ 5% per annum.		
16	Station Heat Rate (kCal/ Kwh)	4250	3800
17	Gross Calorific Value(kCal/kg)	3300	3300
18	Auxiliary Consumption		10%
19	Price of Biomass Fuel in Rs/Tonne with 5% escalation from second year onward	1000	1600
20	Price of Fossil Fuel in Rs/Tonne with 5% escalation from second year onward	1000	1775

Based on the above parameters, the levelised tariff for Bio-mass based power generation using a discounting rate of 10.19% works out to Rs. 4.49 per Kwh. This tariff assumes the benefit of accelerated depreciation for all new projects. However, based on the submission made by some of the stakeholders, the Commission now decides to determine separate tariff for projects availing accelerated depreciation and those not availing the same.

Accordingly, the levelised tariff for projects with accelerated depreciation works out to Rs. 4.49 per Kwh, while for the projects without accelerated depreciation it works out to Rs. 4.54 per Kwh. Further, as proposed in the discussion paper, the Commission decides to determine the tariff for two sub-periods, and the final tariff for Bio-mass based power projects to be commissioned



in the state of Gujarat during the control period of this order is determined as under:

	Initial 10 years	11 <sup>th</sup> year onwards
With Accelerated Depreciation	Rs.4.40/Kwh	Rs.4.75 per Kwh
Without Accelerated Depreciation	Rs.4.45/ Kwh	Rs.4.80 per Kwh

Further, some of the stakeholders have suggested to determine tariff for Bio-mass based generation in two parts, viz. fixed and variable charges separately. The Commission recognizes the fact that cost of Bio-mass based generation comprises of two components: fixed cost and variable or fuel cost. In two-part tariff, while the fixed component can be levelised over the stipulated life of the project, the variable component could be allowed an annual escalation rate of 5%. Accordingly, the Commission has determined the two-part tariff for Bio-mass based projects to be Commissioned during the years 2010-11, 2011-12 and 2012-13 separately, as given in Annexure – III, IV & V respectively.

The project developer will have the choice either to opt for fixed (single part) tariff determined above, which shall remain constant for the relevant period, or to go for the two-part tariff as given in the Annexure.

## **6. Other Commercial Issues**

- 6.1 Transmission and wheeling charges.
- 6.2 Security Deposit
- 6.3 Sharing of CDM benefit
- 6.4 Pricing of Reactive Power
- 6.5 Third-Party sales and Cross-subsidy Surcharge
- 6.6 Metering
- 6.7 Applicability of Intra-State ABT.
- 6.8 Merit order/ Must run station



- 6.9 Monitoring Mechanism for the use of Fossil and Non-fossil fuel
- (A) Fuel usage statement
  - (B) Information system for creation of Database.

## 6.1 Transmission and Wheeling charges

Whenever energy is sold to a Distribution Licensee, the generator will supply power at the interconnection point of generator with the STU/ distribution licensees. Thereafter, the transmission/ wheeling charges will be borne by the distribution licensee.

For wheeling of power for self use (captive use) or third-party sale, the Commission had proposed transmission and wheeling charges in line with those for the wind energy generators.

### Suggestion of the objectors

M/s. Abellon Energy Limited suggested that the transmission and wheeling charges should be kept at losses of 2 % as provided in the Solar Policy of Gujarat. Banking facility for one year subject to the condition that the surplus energy at the end of the financial year is not carried forward to the next year should be allowed. The licensee should pay full tariff determined by the Commission for the surplus energy. Transmission cost upto 10 kms. distance should be borne by the developer and beyond that the transmission cost should be borne by the State Transmission Utility.



M/s. Bio Energy Council of India suggested that no transmission and wheeling charges be levied on biomass based power generators for promoting non conventional technologies.

GETCO and Torrent Power Ltd. have suggested normal open access charges made applicable to the customers who want to avail open access for transmission and wheeling of biomass based electricity generation.

GUVNL suggested that whenever Open Access is granted upto 11 KV wheeling losses should be allowed at 10% and below 11 KV wheeling losses should be allowed at 18.57%. Moreover, the wheeling charges upto 11 KV level should be @ 14 paise per unit and below 11 KV, the same should be @ 45 paise per unit.

### **Commission's Decision**

The Commission had proposed transmission and wheeling charges in line with its order on the Wind and Solar energy tariff.

The Commission recognizes the fact that the cost of transmission / distribution assets created for evacuation of power from any generating project should be recovered to, a reasonable extent, from such generators. Otherwise, it will amount to cross-subsidizing such generators by other consumers. As such, the Commission decides that the transmission and wheeling charges applicable to captive users as well as third party sale shall be as proposed in the discussion paper, which is as under:

- (a) Wheeling of power to consumption site at 66 KV voltage level and above



The wheeling of electricity generated from the biomass based power generation to the desired location(s) within the State shall be allowed on payment of transmission charges and transmission losses applicable to normal Open Access Consumer.

(b) Wheeling of power to consumption site below 66 KV voltage level

(i) The wheeling of electricity generated from the Biomass based power generation, to the desired location(s) within the State, shall be allowed on payment of transmission charges, applicable to normal Open Access Consumer and transmission and wheeling loss @ 10% of the energy fed to the grid. The above loss is to be shared between the transmission and distribution licensees in the ratio of 4:6.

(ii) The wheeling of electricity generated by small investors, having capacity of below 5 MW in the State, to the desired location(s), shall be allowed on payment of transmission charges, applicable to normal open access consumer, and transmission and wheeling losses @ 7% of the energy fed to the grid. The above losses are to be shared between the transmission and distribution licensees in the ratio of 4:3.

Biomass based power generation plant owners, who desire to wheel electricity to more than two locations shall pay 5 paise per unit on energy fed in the grid to the Distribution company concerned in whose area power is consumed in addition to above mentioned transmission charges and losses, as applicable.

(c) Injection at 11 KV and drawl at 11 KV and below voltage level

When the point of injection and drawl at 11 KV or below voltage level lies within the same distribution area, the user shall bear wheeling loss at 6% and pay wheeling charges at 5 paise per unit.

## 6.2 Security Deposit





GETCO, being the State Transmission Utility (STU), is responsible for development of transmission network in the State. At the same time, to utilize the resources optimally, it is essential to ensure seriousness of the project developers towards commissioning of project in time. While timely completion of power evacuation system for such biomass based co-generation project is essential, timely execution of biomass based co-generation project is also equally important. Non-completion of or delays in execution of projects leads to idling of transmission resources. Thus, to assure GETCO about seriousness of biomass based generation projects, it has been proposed that the project Developer shall be required to furnish a Bank Guarantee of Rs. 5 lakhs/MW to GETCO. The Bank guarantee shall be forfeited if the project is not commissioned within four years.

### **Suggestion of the Objectors**

M/s. Abellon Clean Energy Limited, suggested not to consider security deposit applicable to the project developer. However, even if the Commission decides so, the same should be kept @ Rs.25000 MW to GEDA and Rs.2 lacs to GETCO for load flow study. M/s.Amreli Power Ltd. and others have suggested that security deposit should not be charged, since it is the duty of GETCO to evacuate power from the Generator bus bar. In such situation, security deposit is not justified. M/s. Bio Energy Council of India too is not in favour of SD as stated herein above.

GETCO suggested that if the project is not commissioned within the time frame i.e. six months, the Bank Guarantee which is given for security deposit should be allowed to be forfeited.



GUVNL has suggested that distribution licensee/GUVNL should be allowed to collect additional security deposit of Rs. 5 lacs per MW from biomass generators and the same should be allowed to be forfeited in case the project is not commissioned within the stipulated time.

### **Commission's Decision**

While it is the duty of GETCO to create necessary infrastructure for transmission system for evacuation of power generated by biomass based generators, in case the project developer fails to complete the project and evacuation system up to GETCO interconnection point within the stipulated time frame, the infrastructure created by the GETCO remains unutilized and the burden of network charges is borne by consumers. Hence, the Commission does not agree to abolish the provision regarding security deposit.

So far as the time period for completion of projects is concerned, biomass based power projects consist of boiler, turbines, condensers and other ancillary units like conventional power plants and their gestation period is about 3-4 years. Hence, the time period provided in the discussion paper for security deposit is essential to match the gestation period.

So far as additional deposit for distribution licensees is concerned, it is unfair to impose security deposit on this count, because the energy generated from such projects is consumed by the existing customers and no additional distribution network is required to be created. As such, the Commission does not agree to collection of any additional security deposit by the Distribution licensee.



### **6.3 Sharing of CDM benefit**

The Commission has proposed sharing of CDM benefits as per the recommendation made by the Working Group for Renewable Energy Generation constituted by the Forum of Regulators and as per the CERC (Tariff for Renewable Energy Sources) Regulations, 2009, which is as under:

“The CDM benefits should be shared on a gross basis, starting from 100% to developers in the first year after commissioning, and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the developers and the consumers, in the sixth year. Thereafter, the sharing of CDM benefits should remain equal till the time that benefit accrues.”

#### **Suggestion of the Objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India and M/s. Amreli Power Projects Limited, Junagadh Power Projects Limited, Bhavnagar Biomass Projects Pvt. Limited, Ind-Bharath Power Infra Pvt. Ltd have suggested that the project developers be allowed to retain CDM benefits availed by the them. Govt. of Gujarat has in its Draft Biomass Power Policy 2009 provided that 100% benefits of CDM are retained by the Project Developers. The project developers incur huge costs of about US\$ 30000 to 40000 apart from various risks involved in sale of carbon credits.

#### **Commission’s Decision**

Keeping in view the efforts of developers to harness renewable sources of clean energy and also the fact that the consumers bear all the costs of projects, the



Commission decides that the CDM benefits should also be shared between the project developers and the consumers. Accordingly, the formula for sharing of CDM benefit as recommended by Forum of Regulators and included in the discussion paper is retained.

#### **6.4 Pricing of Reactive Power**

The Commission had proposed that the reactive energy pricing should be uniform for all types of renewable sources. As such, the Commission decides that the tariff for reactive energy drawal by the Biomass based generation shall be the same as that for Solar or Wind generators, which is as under:

10 paise/ KVARH	For the drawal of reactive energy at 10% or less of the net energy exported.
25 paise/kVARH	For the drawal of reactive energy at more than 10% of the net active energy exported.

#### **6.5 Third-Party Sale and Cross-subsidy Surcharge**

It has been proposed that third-party sale under Open access transactions carried out using generation from renewable sources shall be exempted from levy of cross-subsidy surcharge under section 42 (2) of the Electricity Act, 2003. However, no banking facility shall be provided for third-party sale.

#### **Suggestion of the Objectors**

M/s. Abellon Clean Energy Limited and Bio Energy Council of India have requested banking facility and third-party sale for reasonable time of about 12



months may be allowed, for the unutilized energy during third-party sale/purchase. The same provisions are made by Rajasthan and MP ERCs.

GUVNL, GETCO and Torrent Power Ltd. have suggested that cross-subsidy surcharge for third-party sale under open access transactions carried out by biomass based power generators should be made applicable.

### **Commission's Decision**

Keeping in view the climate change issue, promotion of non-conventional energy sources (biomass based power generation) are required to be encouraged. Hence, the Commission decides that no cross-subsidy surcharge is to be levied on third-party sale/ purchase of biomass based energy. So far as banking for 12 months is concerned, it is to clarify that electricity generation from biomass based projects is firm in nature and can be scheduled. Banking is allowed to wind and solar electricity generation, which are infirm in nature and it is difficult to schedule such energy. Therefore, the Commission decides that there is no need to change the proposed mechanism for third-party sale and cross-subsidy surcharge provided in the discussion paper.

### **6.6 Metering**

Metering and communication facilities shall be provided by the project developer in accordance with the following:

1. Central Electricity Authority (Installation and Operation of Meters) Regulations 2006.
2. Intra-State ABT Order dt.11<sup>th</sup> August, 2006 and subsequent amendments dated 1<sup>st</sup> April,2010.



3. Grid Code, 2004 (Notification No.5 of 2004) of GERC.
4. Distribution Code, 2004 (Notification No.6 of 2004) of GERC
5. Open Access Regulation, 2005.

ABT compatible energy meter is to be installed at generators' end and if the power is to be wheeled to consumer premises, then ABT compatible meter is to be installed at the consumer premises also.

### **Suggestion of the objectors**

M/s. Abellon Clean Energy Limited suggested that the meters should be provided at 11 KV side of switchyard of generating station transformer. GETCO has suggested that the RTU which will be installed by the project developers must provide communication link up to the nearest GETCO s/s, where PLCC/Radio Link connectivity exists. The maintenance of RTU and connectivity up to GETCO access shall be the responsibility of the project developers.

### **Commission's Decision**

The Commission finds no justification in allowing any deviations from the regulations and codes prescribed by the CEA and the Commission.

As regards the suggestions of GETCO relating to maintenance of RTU and connectivity up to GETCO, the Commission agrees that maintenance of any equipment/ system is the responsibility of the party providing and owning such equipment/ system.



## **6.7 Applicability of Intra-State ABT**

Generation from Biomass based power projects is predictable and hence, can be scheduled in accordance with ABT guidelines. Biomass based power generating plants are, therefore, covered under the ambit of Intra-State ABT order. In other words, they are governed by the provisions of the Intra-State ABT Order of the Commission. Such plants have to install Intra-state ABT Compliant meters at their place for energy accounting and Remote Terminal Unit (RTU) to facilitate SLDC in real time monitoring

## **6.8 Merit Order Dispatch/ Must Run Status**

The Commission has considered that although biomass based co-generation projects will need to follow scheduling and dispatch schedules as per the Intra-State ABT order of the Commission, Merit Order Dispatch principles will not be applied to such projects on account of small size of plants and promotional aspect of renewable sources of energy.

### **Suggestion of the objectors**

M/s. Abellon Clean Energy Limited suggested that biomass based project developers below 10 MW should be exempted from scheduling as per CERC guidelines. The GUVNL and SLDC have suggested that merit order principle should in accordance with scheduling and dispatch procedure and the same is to be followed through UI mechanism. The project should not be allowed Must Run Status, otherwise it will affect the energy accounting.



## **Commission's Decision**

Power generation from biomass is firm in nature, as such the Commission has proposed that such plants are required to follow scheduling and dispatch procedures as per the Intra- State ABT Order. The Commission has also decided that the merit order dispatch principle will not apply to such plants as the size of plants is small and such renewable sources of energy need to be encouraged. In view of above, it is decided to retain the same clause as per discussion paper.

### **6.9 Monitoring Mechanism for the use of Fossil and Non-fossil fuel**

In order to ensure that the use of fossil fuel is within the prescribed limit, it is essential to create necessary mechanism for monitoring the usage of fossil and non-fossil fuel utilized by the biomass based power projects. Accordingly, the Commission prescribes the following:

#### **Fuel usage statement**

[A] The Commission nominates the Gujarat Energy Development Agency (GEDA) as the nodal agency for monitoring the usage of fossil fuel by the Bio-mass based generators. The project developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant to the procurer and the nodal agency for each month, along with the monthly energy bill. The statement should cover details, such as:





- i. Quantity of fuel (in tonnes) for each fuel type (biomass fuel and fossil fuel) consumed and procured during the month for power generation purposes,
- ii. Cumulative quantity (in tonnes) of each fuel type (biomass fuel and fossil fuel) 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 tones),
- 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 fuel and fossil fuel) available at the power plant site.

Non-compliance to the condition regarding limited use of fossil fuel, during any financial year shall result in withdrawal of “Preferential tariff” as per this order for such biomass based power project.

**[B] Information system for creation of Database**

It is necessary to create data-base for further review of the technical/ financial parameters for next tariff order. Therefore, project developers shall have to keep records of the following items and provide the same to GEDA and the Commission annually to create data-base for future.

- i. Number and categories of employees for different purposes.
- ii. Administrative and General Expenses.



- iii. Repair and Maintenance work carried out during the year specifying activities carried out with time period and spare/ material replaced and its cost.
- iv. Details of Spare parts of the plant / machines replaced during the year with justification and cost.

### **Suggestion of the objectors**

GUVNL has suggested to have GEDA as the nodal agency for monitoring of use of fossil fuel and non-fossil fuel and also requested to consider penalty equivalent to 1.5 times of difference between cost paid by Discoms for sourcing of renewable energy from alternative source to meet the RPO obligation minus preferential tariff determined by the Commission.

### **Commission's Decision**

It is already provided in the discussion paper that project developers should provide the data to GEDA whom the Commission proposed as nodal agency. So far as penalty is concerned, the same should be decided by the Commission in accordance with the provisions of the Act. It is also provided that in case of non-compliance observed by the Nodal Agency, they will report it to the Commission and the Commission will decide on the compensation, if any, after seeking the views of all concerned.



**7. Applicability of the Order**

This order shall be applicable with effect from **1<sup>st</sup> June, 2010**. The tariff determined by this order shall be applicable to all the Biomass based power projects commissioned during the control period of this order.

Sd/-

**[Dr.P.K.Mishra]**  
**Chairman**

Sd/-

**[PRAVINBHAI PATEL]**  
**Member (T)**

Place: Ahmedabad  
Date: 17/05/2010



## **Annexure – I**

### **Comments received from the following Stakeholders for the Biomass based power projects.**

- 1) Abellon Clean Energy Limited
- 2) Bioenergy Council of India
- 3) Amreli Power Projects Pvt. Ltd.
- 4) Junagadh Power Projects Pvt. Ltd.
- 5) Bhavnagar Biomass Power Projects Pvt. Ltd.
- 6) Ind-Barath Power Infra Pvt. Ltd.
- 7) Gujarat Energy Transmission Corporation Limited
- 8) Gujarat Urja Vikas Nigam Limited
- 9) Shri Pranavbhai Mehta
- 10) Paryavarana Mitra
- 11) Ankur Scientific Energy Technologies Pvt Ltd.



## **Annexure – II**

### **List of participants in the hearing of Biomass based power projects**

- 1) Abellon Clean Energy Limited
- 2) Bioenergy Council of India
- 3) Amreli Power Projects Pvt. Ltd.
- 4) Junagadh Power Projects Pvt. Ltd.
- 5) Bhavnagar Biomass Power Projects Pvt. Ltd.
- 6) Ind-Barath Power Infra Pvt. Ltd.
- 7) Gujarat Energy Transmission Corporation Limited
- 8) Gujarat Urja Vikas Nigam Limited
- 9) State Load Dispatch Centre, Gujarat
- 10) Shri Pranavbhai Mehta
- 11) Paryavarana Mitra



### Annexure – III

<b>Two-Part Tariff for Biomass Projects to be commissioned in FY 10-11 (From June'10) in Rs/Kwh</b>				
Year	Fixed Levelised Tariff	Fuel Cost	Total Tariff	
			Without Tax Benefit	With Tax Benefit
1	1.59	2.08	3.67	3.62
2	1.59	2.18	3.77	3.72
3	1.59	2.29	3.88	3.83
4	1.59	2.41	4.00	3.95
5	1.59	2.53	4.12	4.07
6	1.59	2.66	4.25	4.20
7	1.59	2.79	4.38	4.33
8	1.59	2.93	4.52	4.47
9	1.59	3.07	4.66	4.61
10	1.59	3.23	4.82	4.77
11	1.59	3.39	4.98	4.93
12	1.59	3.56	5.15	5.10
13	1.59	3.74	5.33	5.28
14	1.59	3.92	5.51	5.46
15	1.59	4.12	5.71	5.66
16	1.59	4.33	5.92	5.87
17	1.59	4.54	6.13	6.08
18	1.59	4.77	6.36	6.31
19	1.59	5.01	6.60	6.55
20	1.59	5.26	6.85	6.80



**Annexure – IV**

<b>Two-Part Tariff for Biomass Projects to be commissioned in FY 11-12 in Rs/Kwh</b>				
Year	Fixed Levelised Tariff	Fuel Cost	Total Tariff	
			Without Tax Benefit	With Tax Benefit
1	1.59	2.18	3.77	3.72
2	1.59	2.29	3.88	3.83
3	1.59	2.41	4.00	3.95
4	1.59	2.53	4.12	4.07
5	1.59	2.66	4.25	4.20
6	1.59	2.79	4.38	4.33
7	1.59	2.93	4.52	4.47
8	1.59	3.07	4.66	4.61
9	1.59	3.23	4.82	4.77
10	1.59	3.39	4.98	4.93
11	1.59	3.56	5.15	5.10
12	1.59	3.74	5.33	5.28
13	1.59	3.92	5.51	5.46
14	1.59	4.12	5.71	5.66
15	1.59	4.33	5.92	5.87
16	1.59	4.54	6.13	6.08
17	1.59	4.77	6.36	6.31
18	1.59	5.01	6.60	6.55
19	1.59	5.26	6.85	6.80
20	1.59	5.52	7.11	7.06



**Annexure – V**

<b>Two-Part Tariff for Biomass Projects to be commissioned in FY 12-13 in Rs/Kwh</b>					
Year	Fixed Levelised Tariff	Fuel Cost	Total Tariff		
			Without Tax Benefit	With Tax Benefit	
1	1.59	2.29	3.88	3.83	
2	1.59	2.41	4.00	3.95	
3	1.59	2.53	4.12	4.07	
4	1.59	2.66	4.25	4.20	
5	1.59	2.79	4.38	4.33	
6	1.59	2.93	4.52	4.47	
7	1.59	3.07	4.66	4.61	
8	1.59	3.23	4.82	4.77	
9	1.59	3.39	4.98	4.93	
10	1.59	3.56	5.15	5.10	
11	1.59	3.74	5.33	5.28	
12	1.59	3.92	5.51	5.46	
13	1.59	4.12	5.71	5.66	
14	1.59	4.33	5.92	5.87	
15	1.59	4.54	6.13	6.08	
16	1.59	4.77	6.36	6.31	
17	1.59	5.01	6.60	6.55	
18	1.59	5.26	6.85	6.80	
19	1.59	5.52	7.11	7.06	
20	1.59	5.80	7.39	7.34	

