

**HARYANA ELECTRICITY REGULATORY COMMISSION**  
**BAY No. 33-36, SECTOR - 4, PANCHKULA - 134 112, HARYANA**  
**CASE NO. HERC / PRO - 4 OF 2009**

**Date of hearing: 30/04/2009**

**Date of Order : 6/11/2009**

In the matter of order dated 25/03/2009 passed by the hon'ble Appellate Tribunal for Electricity, New Delhi in Appeal No. 113 of 2007 and 24 of 2008 and in the matter of determination of tariff for biomass based generation projects in Haryana.

<b>PRESENT:</b>	<b>Shri Bhaskar Chatterjee, Chairman</b> <b>Shri T.S. Tewatia, Member</b>
On behalf of the Power Utilities	Shri Neeraj Gulati, CE , HVPNL  Shri D.S. Rathee, SE/RA, DHBVNL  R.K. Garg, GM/RA, UHBVNL  Neeraj Kr, jain, Advocte  Chandan Singh, XEN, UHBVNL
On behalf of the Petitioner	Shri Anand. K. Ganeshan, Advocate  Shri P.P. Gupta, Star Wire Biomass (P) Ltd.  Shri Ajay Maini, M/s Puri Oil Mills Ltd.

**ORDER**

The present order disposes of the matter remanded back to the Commission by the hon'ble Appellate Tribunal for Electricity in Appeal No. 113 of 2007 and 24 of 2008 on 25/3/2009.

The brief facts of the case are presented as under:-

The Haryana Electricity Regulatory Commission (the Commission) had passed an order dated 15/05/2007 with respect to determination of tariff and related issues from non – conventional sources of energy including biomass.

The main features of the Commission's order dated 15/05/2007 are reproduced below:

- **Percentage of Electricity from Non – Conventional sources of total Consumption of Electricity:**

Year	Minimum Percentage (%)
2007-08	3%
2008-09	5%
2009-10 & thereafter	10%

- **Wheeling Charges:** The wheeling charges shall be levied @ 2% of the energy fed to the grid irrespective of the distance from the generating stations.
- **Grid Connectivity:** The State Transmission Utility (STU) / Distribution Licensee will bear the cost of EHV / HV transmission line up to a distance of 10 Km from the point of energy metering. Beyond 10 Km distance, the balance cost of transmission line shall be shared equally between the developer and the STU / Distribution Licensee.
- **Banking:** The banking facility shall be allowed anytime of the day and night subject to the condition that surplus energy at the end of the financial year shall not be carried over to the next year.
- **Tariff:** The Commission approves the average tariffs in respect of different sources of energy as per table below. The tariffs shall be applicable for a period of five years and energy shall be purchased from non – conventional energy sources on first charge basis.

	Wind	Mini Hydel (up to 2 MW)	Biomass	Bagasse (cogeneration)
Tariff (Rs/kWh) base year FY 2007-08	4.08	3.67	4.0	3.74
Annual Escalation from FY 2008-09	1.5%	1.5%	2%	2%

- **Carbon Credit:** The IPPs will be required to submit details of Carbon Credit availed by them on an annual basis on 1<sup>st</sup> April every year as per Kyoto Protocol. The Commission shall decide the appropriation of the same amongst the stakeholders including consumers.
- **Power Purchase Agreement:** The IPPs shall sign Power Purchase Agreement (PPA) with the electricity distribution licensee(s) for sale of energy generated by them from non – conventional energy sources in the State of Haryana.

Aggrieved by the above order of the Commission Chemicals International Ltd, Tecpro Systems Ltd., Gammon Bermaco Consortium and Starwire (India) Ltd filed a combined petition seeking review of the order dated 15<sup>th</sup> May 2007 with reference to biomass based projects. The Commission provided benefit of hearing to all the parties who had submitted their objections/suggestions and attended the public hearing on the review petition. The hearing was held on 29/08/2007. The Commission vide its order dated 3/10/2007 disposed of the review petition without providing further relief to the petitioner(s). However, while disposing of the petition the Commission observed that “ To allay the fear from the mind of the IPPs, the Commission would like to clarify at this stage that the rate of return on equity, capital cost, debt-equity ratio already mentioned in the Commission’s order and accelerated depreciation at the rate of 7.5% will be honoured in the subsequent years as well for the projects attaining financial closure during the validity period of the tariff determined by the Commission i.e. FY 2007-08 to FR 2011-12. With regard to other parameters of expenditure to be taken into account for calculation of tariff the same will be considered after hearing all the stakeholders and examining the submissions to be made by them. However, for the projects attaining financial closure after the said period the Commission will examine all the cost components afresh to determine the tariff(s) applicable beyond FY 2011-12.”

Aggrieved by the aforesaid order(s) of the Commission, the petitioner Chemical International Ltd. & Others filed an appeal (Appeal No. 113 of 2007) before the hon’ble Appellate Tribunal for Electricity, New Delhi. Simultaneously Uttar Haryana Bijli Vitran Nigam

Ltd (UHBVNL) also filed an appeal before the Appellate Tribunal for Electricity, New Delhi against the said order(s). The hon'ble Appellate Tribunal for Electricity after hearing the parties remanded back the case to the Commission vide order dated 25/03/2009 with the following directions.

*“On going through the main order and the review order passed by the Commission we find that there are no reasons for the said finding given in the impugned order. Therefore, it would be appropriate to remand the matter back to the Commission to hear the parties again on these issues and decide the same on the reasons to be recorded in the order. It is made clear that we are not expressing any opinion on these issues.*

*Accordingly the impugned order dated 15/05/2007 is set aside and the same is remanded to the Commission for deciding these two issues after giving the opportunity to both the parties as indicated above”.*

The issues mentioned below were raised before the hon'ble Appellate Tribunal on which decision has been rendered:

- With regard to cost of grid connectivity from the generating unit to the point of metering to be borne by the distribution licensee up to a distance of 10 KMs and beyond 10 KMs to be shared equally by the distribution licensee and project developer.
- With regard to the fixation of tariff the Commission determined a rate of Rs. 4 / kWh with an annual escalation of 2% for the biomass based power generation against Rs. 4.66 / unit sought by the appellant with an annual escalation of 11%.
- As against the above the distribution licensee UHBVNL in Appeal No. 24 of 2008 submitted that the tariff must be fixed at Rs. 3.32/kWh as was proposed in the concept paper circulated by the Commission earlier on which stakeholders comments were sought. Further, the entire cost of grid connectivity from the generating unit to the point of metering should be borne by the project developer.

In the light of the order(s) passed by the hon'ble Appellate Tribunal in Appeal No. 113 of 2007 and Appeal No. 24 of 2008 the Commission issued notice of hearing to the parties i.e. Chemical International Ltd. & Others and UHBVNL and DHBVNL. The Commission in the hearing held on 30/04/2008 heard at length the petitioner as well as UHBVNL and directed them to file a written submission as well.

The oral as well as the written submissions of the parties on different issues are presented hereunder:-

**1. Third Party Sale:**

The biomass based generation project developers submitted that under the provisions of The Electricity Act, 2003 generation is a delicensed activity and they are free to sell power to a person of their choice. Consequently, by not allowing third party sale the Commission has brought back 'license raj' through the backdoor. The Policy directives of a few other States that have allowed third party sale were cited in support of their arguments before the Commission.

- Chhattisgarh: For sale of power to a third party, the rates will have to be settled mutually between the generating party and the third party which would purchase the power.
- Meetings with the Chief Secretaries of Tamil Nadu, UP, Gujarat, Punjab, Haryana and Maharashtra was held by the Secretary, MNES. Subsequently, UP and Punjab allowed third party sale with uniform wheeling charges.
- Rajasthan: The power producers may use the power for captive consumption or for sale to consumers / licensees including the distribution licensee.

Summing up, it was argued by the petitioner that the Commission's order dated 15<sup>th</sup> May, 2007 has been set aside by the hon'ble Appellate Tribunal. Thus the Commission should remove the restrictions of signing PPA only with the Distribution Licensee(s) and allow third party sale of energy generated by the bio-mass based power project developers. This will make the project viable as well as promote setting up of large number of such projects in Haryana.

It was also brought to the notice of the Commission that HAREDA / State Government provides no assistance / incentive as far as land acquisition / site development or procurement of plant and machinery is concerned. There is no capital subsidy / incentive or concessional loans or any other fiscal incentive. Consequently, the power utilities or the State Government should not have any preferential claim on them.

It is also brought to the notice of the Commission that on an annual basis the distribution licensees purchase in excess of 300 MW @ ranging from Rs 6 to Rs. 10/kWh and even more. Thus in Haryana there are all the more reasons to promote biomass projects by creating an enabling environment in terms of tariff, connectivity and third party sale.

On the issue of wheeling charges DHBVNL and UHBVNL objected to the Commission's order providing 2% of energy injected as wheeling charges as the same does not take into account the transmission and distribution losses in the system.

## 2. GRID CONNECTIVITY:

The project developers while arguing have pointed out that the Electricity Act 2003, National Electricity Policy and National Tariff Policy on Non – Conventional Energy Sources (NCES) provides as under.

The Preamble of the Act reads as follows:

*“An Act to consolidate the laws relating to generation, transmission, distribution, trading and use of electricity and generally for taking measures conducive to development of electricity industry, promoting competition therein, protecting interest of consumers and supply of electricity to all areas, rationalization of electricity tariff, ensuing transparent policies regarding subsidies, promotion of efficient and environmentally benign policies...”*

The general objective spelt out in the preamble the Act specifically provides as under:

**Section 86 (1) (e) of the Act** provides that the “State Commission shall promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid ....”

**Section 61 (h) of the Act** provides that, “the Appropriate Commission shall , subject to the provisions of this Act, specify terms and conditions for determination of tariff and in doing so shall be guided by the following namely, (h) the promotion of cogeneration and generation of electricity from renewable sources of energy, (i) the National Electricity Policy and Tariff Policy”.

The biomass project developers also invited attention of the Commission to the relevant provisions of the National Electricity Policy i.e. **Clause 5.2.20** : *“Feasible potential of non – conventional energy resources, mainly hydro, wind and biomass would also need to be exploited fully to create additional power generation capacity. With a view to increase the overall share of non - conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures”*. Thus they argued that the above provision of the National Electricity Policy mandates that promotional measures such as grid connectivity is essential to stimulate private investments in non – conventional energy projects.

Additionally, it was submitted that clause 5.12.2 clearly stipulates the issue of connectivity. The same is re – produced below:-

*“The electricity Act 2003 provides that co-generation and generation of electricity from non – conventional sources would be promoted by the SERCs by providing suitable measures of connectivity with grid and sale of electricity to any person and also by specifying, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. Such percentage for purchase of power from non – conventional sources should be made applicable for the tariffs to be determined by the SERCs at the earliest. Progressively the share of electricity from non – conventional sources would need to be increased as prescribed by SERCs ..... Considering the fact that it will take some time before non -conventional technologies compete, in terms of cost, with conventional sources, the Commission may determine an appropriate differential in prices to promote these technologies”*. Para 6.4 adds that, *“procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission”*.

The above contention was further supported by the fact that **Section 39(2) (c)** of the Act states that the State Transmission Utility shall ensure development of an efficient, co – ordinate and economical system of intra state transmission lines for smooth flow of electricity from generating stations to the load centers. **Section 40** of the Act stipulates that it shall be the duty of the transmission licensee to build, maintain and operate an efficient, co-ordinated and economical system of intra –state transmission”.

In addition to the above Section 42 of the Act states that it shall be the duty of the distribution licensee to develop and maintain an efficient, co-ordinated and economical distribution system in his area of supply. It was thus argued that providing suitable measure of connectivity is the responsibility of the Transmission / Distribution Licensees / Utilities.

As against the above submissions of the project developers the distribution licensee(s) in Haryana i.e. UHBVNL & DHBVNL argued that that 'nothing comes free' and the cost of transmission / distribution has to be paid by any party using the lines of the utilities. It was further stated that even if the amount is allowed to be recovered by way of ARR it would tantamount to cross – subsidy.

### **3. Capital Cost**

On the issue of Capital Cost the biomass based generation project developer submitted that as per the equipment suppliers for such projects the capital cost works out to Rs. 50 millions / MW. Tariff based on a lower capital cost as done by the Commission will make the project un – viable and project finance impossible to arrange. Resultantly, the project cost of Rs. 42.9 millions/MW considered by the Commission for arriving at a tariff of Rs. 4/unit, needs to be revised to Rs. 50 million / MW and tariff should be worked out accordingly.

### **4. Tariff:**

On the issue of tariff it was submitted that the Commission while working out tariff considered fuel cost of Rs. 1600 / MT against the prevailing price of Rs. 1800 / MT. The nodal agency HAREDA has also confirmed that fuel is currently not available below a price of Rs 1810 / MT when order was passed on 15/05/2007. The same at present after considering stocking, chipping, wastages etc works out to 2230 / MT i.e. 2200/MT as per quotes available from the biomass suppliers in the region and the remaining being the cost of handling and preparing the fuel.

### **5. Escalation Rate:**

The rate of escalation to take care of rise in fuel cost and O&M expenses should be at least 10% per annum. In its absence the un-certainty on fuel account would become a deterrent as this cost is beyond the control of project developers. The medium to long term RPI is also in the range of 7 to 8%. Alternatively the Commission may allow two part tariff i.e. a fixed

component to take care of fixed cost recovery and a formula based scalable fuel component as per actual cost of biomass available from year to year.

#### 6. Return on Equity:

The ROE @ 16% allowed by the Commission needs to be grossed by 15% being the tax incidence (Minimum Alternate Tax). The Commission, as evident from its order(s) on HPGCL, 's generation allows ROE as well as tax on the same. Thus there is no reasons that biomass projects be denied income tax (MAT) as a pass through (this is also supported by CERC's draft Regulations on treatment of ROE). In its absence the cash flow of the project gets seriously impaired lowering the DSCR and IRR making project finance difficult and expensive. The tariff determined by the Commission has not considered tax incidence while computing ROE. Hence after accounting for impact of MAT the ROE should be computed @ 18.4%.

#### 7. Order of the Commission:

The Commission has taken note of the submissions of the biomass project developers, counter arguments put forward by the distribution licensees in Haryana i.e. UHBVNL & DHBVNL and additional data / information made available by the nodal agency for development of renewable energy in Haryana i.e. HAREDA. It has also gone through the tariff policy of the Ministry of Power and instructions issued from time to time by the Ministry of New and Renewable Energy (MNRE), Government of India including the draft Regulations circulated by CERC in the recent past. It has also examined at great length the order(s) passed by other State Electricity Regulatory Commission on tariff fixation and associated issues with regard to energy generated from biomass.

#### 1. Carbon Credit

Before commenting on the arguments / counter arguments put forward by the stakeholders on different issues the Commission would like to focus on the issue of carbon credit which provides incentives for setting up power projects from renewable sources. The Commission finds that in our earlier order while reckoning with 'capital cost' and other expenditures for working out tariff expenses on account of registering the project as CDM project other related expenses including authentication of CER/VERs have not been considered. Hence there is a need to revisit the issue. **Reduction of Green House Gas Emission is one of the stated national objectives and closely associated**

with the issues relating to climate change which are becoming relevant and much debated topic in the recent times. The Commission had kept the issue of apportionment of carbon credit which flows from reduction of Green House Gas Emission open to be decided at a later stage on the basis of details to be made available by the developers. However, in view of its growing importance the Commission felt that a clear cut policy of financial incentive at this stage will be beneficial to all the stakeholders. Consequently, in partial modification to its order dated 15<sup>th</sup> May 2007, the Commission decides that as an incentive for setting up renewable energy based generation projects that may lead to reduction in Green House Gas Emission any carbon credit earned by the project developer shall be shared in the ratio of 25:75 i.e. 25% to the distribution licensee and 75% shall be retained by the project developer. The benefits of carbon credit passed on to the distribution licensee shall be utilized to reduce their power purchase cost. The Commission expects that by this modification additional funds are likely to be made available to the developers to make their project more viable.

## **2. Third Party Sale**

The Commission has considered the submissions of the parties on being allowed third party sale in place of mandatory signing of the PPA with the distribution licensees' i.e. UHBVNL and DHBVNL. After careful consideration of the facts the Commission observes that there is no dispute over the fact that generation is a delicensed business and the developers are free to sell power to consumers of their choice through the provisions of transmission / distribution open access, which as a matter of fact the Commission would like to encourage. However, taking into consideration the fact that the Commission has determined renewable portfolio obligation for the distribution licensees for FY 2009-10 and beyond as 10% of the total consumption of electricity within the their licensed area and the fact that currently not even 0.5% renewable energy is available within Haryana, the **Commission, for the projects approved by HAREDA does not agree with the contention of the petitioner that third party sale should be allowed. The tariff calculated for the biomass power is preferential and does take into account the financial risk of the stakeholders. The appellant could not produce any policy document either from the Government of India or from the CERC before the Commission to support their arguments. However, in an event the distribution licensee (UHBVNL & DHBVNL) refuses in writing to off take power at the tariff determined by the Commission then third party sale can be considered.**

### **3. Renewable Purchase Obligation(RPO)**

The Electricity Act, 2003, the National Electricity Policy 2005 and the Tariff Policy 2006 makes it obligatory upon the State Electricity Regulatory Commissions to fix a certain percentage for purchase of power from renewable energy sources in the area of supply of a distribution licensee. The RPO as outlined under Para 4(i) of the Haryana Electricity Regulatory Commission's order dated 15<sup>th</sup> May 2007 envisaged a minimum procurement of 10% in FY 2009-10 and thereafter. The Commission, after deliberating the issue of RPO with the distribution licensees and other stakeholders in Haryana notes that at present less than 1% power is generated through renewable sources in Haryana such as biomass and bagasse (co-generation). Consequently, it will not be possible for the distribution licensees in Haryana to meet their RPO. Sourcing renewable energy from outside the state may not be technically feasible in the absence of a detailed regulation. Keeping in view the existing scenario and also taking into account the renewable energy projects being set up in Haryana., the Commission feels appropriate to modify its earlier order dated 15/05/2007 and fixes minimum purchase obligation as 2% for FY 2009-10. The Commission is in the process of framing regulations for renewable energy sources under section 61(h) read with section 181 (1&2) of the Electricity Act, 2003 wherein after reviewing the progress of renewable energy projects the RPO shall be fixed for FY 2010 – 2011 and thereafter.

### **4. Grid Connectivity**

The Commission observes that Haryana has a fairly elaborate transmission / distribution network in the State and is amongst the first few States in India to achieve 100% electrification. Resultantly, the likelihood of any project being further than 10 K.M. away from the power utilities network is negligible. The Commission feels that apprehension of the developers in this regard is not based on sound reasons. The arguments put forward by them are not convincing either. The very objective of promoting small distributed generation projects at the load centre itself is to facilitate local consumption thereby avoiding the need for wheeling power over long distances and thereby saving the resulting line losses. Hence the Commission is not inclined to accept the arguments of the parties as no data was provided regarding the exact location of the proposed project by biomass project developer seeking to pass on the entire cost to the power utilities or the distribution licensee's submissions that the entire cost should be borne by the project developers. **Consequently the Commission decides that in accordance with section 40 & section 42 of the Electricity Act, 2003 the transmission / distribution licensee, as the case may be, shall build, maintain and operate the transmission lines**

from the point of energy metering upto a distance of 10 KMs depending upon the location of the project. As ordered earlier, beyond 10 KMs distance the balance cost of transmission lines shall be equally shared between the developers and the STU/Distribution licensee. The Commission further makes it clear at this stage that grid availability charges / connectivity charges as well as SLDC charges shall be applicable to the project developer as determined by the Commission from time to time for conventional fuel (Coal) based generation in Haryana. The non – conventional fuel based generators shall comply with all the relevant provisions of Haryana Grid Code (HGC), Regulations, 2009 (Regulation No. HERC/22/2009) notified on 12<sup>th</sup> May, 2009. The Distribution licensees also need to appreciate the small capacities of biomass projects are targeted at load centre consumption thereby the incidence of losses will be minimal hence deducting 2% of the energy fed by the biomass based project developers shall be sufficient to cover the cost of wheeling.

The Commission has already dwelt upon the issue of wheeling charges in the above Para and accordingly **wheeling charges shall be levied @ 2% of the energy fed into the Grid irrespective of the distance from the generating station.**

## 5. Project Cost

The Commission considered the issue of project cost at great length. The cost of project considered by the Commission after due deliberations including public consultations and feedback received from the nodal agency HAREDA was Rs. 42.9 million / MW. HAREDA has now submitted cost of biomass power projects sanctioned by Indian Renewable Energy Development Agency as under (Rs/MW).

- AA Energy Limited (Maharashtra): 46.5 Millions (including 132 KV transmission line 15 KMs).
- Areli Power Projects (Gujarat): Rs. 49.4 Millions (including air cooled condenser and briquetting Units).

On close examination of the above project cost it is observed that the project cost considered by the Commission is more or less at par with AA Energy Limited (Maharashtra) considering the fact that the cost of transmission lines beyond the point of metering has been

shown to be borne by the developers whereas in actual practice this expenditure is to be incurred by the concerned power utilities. Consequently this amount is to be deducted from the project cost. While project cost of Areli Power Project is not strictly comparable as it also includes the cost of air cooled condenser and briquetting units which is not the case in Haryana. **Consequently, the Commission at this stage, when no actual data of biomass project in Haryana is made available, finds no reasons for revising the capital cost for estimating tariff as sought by the biomass project developers.**

The plea of bio – mass project developer seeking 10% per annum in O&M was also examined at length. There are certain elements in the basket of O&M expenses on which WPI could have some impact but not the RPI. The rate of WPI in the last couple of years has been hovering around 1.5%. Thus the Commission finds it difficult to accept the contention that 10% O&M escalation ought to be considered.

## 6. Cost of biomass

The Commission in its order dated 15th May 2007 had considered the cost of biomass mix at Rs. 1600 / tonne based on data provided by HAREDA collected from the district administration.

HAREDA has now submitted cost of biomass as under:

Type	Minimum Price (Rs / Tonne)	Maximum Price (Rs / Tonne)
Rice Husk	2508	3467
Rice Straw	988	1400
Wheat Straw	1672	2579
Cotton Stalk	1013	1425
Mustard Stalks	1725	2625
Arhar Stalks	1117	1542

It is observed from the above that the cost of different biomass ranges from Rs. 988 to Rs. 3467 / tonne. The average of the minimum price is Rs. 1504 and the average of the maximum price is Rs. 2173 per tonne. It is also a fact that the usage will depend on the region in which the project is located as well as seasonal availability of different bio – mass mentioned above. As hardly any project has been set up so far and the fact that there is no organized market for bio – mass and the order of the Commission is valid for an initial period of 5 years ending FY 2012 – 13, it will be too pre – mature to consider revising the cost of bio – mass mix

considered by the Commission after holding a public hearing. However, the Commission agrees that there is bound to be fluctuation in the market and biomass prices might vary from time to time. The contention of UHBVNL & DHBVNL i.e. tariff should be pegged at Rs. 3.32/unit in accordance with the tariff indicated by the Commission in its consultation paper is devoid of any merit. The tariff mentioned in the consultation paper was only indicative on which objections / suggestions etc. of stakeholders was sought. After considering the feedback on different components of the indicative tariff including project cost, biomass cost, interest, O&M etc. the Commission issued the final tariff order dated 15/05/2007.

## **7. Return on Equity**

On the issue of higher Return on Equity (ROE) sought by the biomass project developer as a result of MAT the Commission is of the view that the terms and conditions of determining conventional fuel based generation tariff in Haryana notified in 2008 provides for 14% ROE. **Consequently, even if the current rate of MAT @ 15% is considered, the post tax ROE works out to about 16% which was considered by the Commission while estimating tariff for biomass based generation project in Haryana. Thus the Commission finds no reason to allow any higher ROE as sought by the biomass project developers.** The project developers ought not to lose sight of the fact that it only in the regulated power sector a guaranteed return is provided. The financial rigors of the competitive commercial sector demands that ROE should be earned by way of efficiently managing capital / operating business expenses unlike debt fund where the interest liability has to be statutorily discharged. Any slippage on these fronts yields no return to the equity holders in the form of dividend and in case the equity of business enterprise is traded in the bourses instead of capital appreciation the shareholders wealth might as well depreciate.

The Commission has taken note of the plea of the developers regarding softer treatment and providing helping hand for encouraging green power as compared to power generated from fossil fuel. Instructions issued from the Government of India on this subject and effort of the State Government to play a promotional role has also been kept in mind. The Commission in this context has deliberated at length the arguments put forward on each segment of capital cost including the cost of biomass to be incurred by the project developer and their likely impact on the tariff calculation. The appellants arguments that the Commission should encourage the prospective developers to come forward in these ventures which are new for the State and involve certain amount of risk by announcing attractive tariff has also been well taken. It was

further stated by them that our society should be prepared to pay more to augment the capacity of green power for a pollution free future. This is more relevant when considering the fact that even for coal based power; the State utilities are at times paying more than the proposed tariff fixed by the Commission for renewable energy. The Commission agrees that the green power procured from bio-mass project would be preferable and welcome as compared to power generated from fossil fuel. While the Commission is conscious that it has to play the role of a catalyst to promote green energy, nevertheless it cannot provide unlimited financial incentives totally divorced from the ground realities. The Commission understands that the market for bio-mass fuel is uncertain and there is bound to be varying price of the raw material in future. With more projects coming in the State which the Commission would very much welcome, they are likely to influence the availability of biomass including its price. Having considered the fluctuation in the market the Commission still feels that it may not be possible to revise the tariff on year to year basis based on periodical market survey. It is felt that in such an uncertain scenario no serious developer would likely to invest in renewable energy project unless he is assured of guaranteed return on his investment over the years. The Commission has also taken into consideration the revised project cost submitted by the appellants and it has also recorded its reason for not wholly agreeing with the same. The arguments on Return of Equity (ROE) and providing higher O&M have also been discussed. **Taking a view on the totality of the arguments, the Commission feels that it would be suffice at this stage to provide incentive to the developers by modifying the yearly escalation from 2% which has been part of our order dated 15<sup>th</sup> May 2007 to 3% with prospective effect i.e. from FY 2009-10 while keeping the tariff for power generated from biomass at Rs. 4 / unit. The Commission makes it clear that the present tariff including escalation factor shall be valid till FY 2011 – 12. Thereafter, after taking into consideration the data emanating from the biomass projects set up in Haryana including prevailing market conditions for biomass mix, project cost and O&M practices the Commission shall revisit the tariff and other parameters and decide afresh.**

The Commission further decides that all other parameters / norms not specifically dealt with in the instant order shall continue to be as per its earlier order(s).

Bhaskar Chatterjee  
(Chairman)

In regard to the above order of Sh. Bhaskar Chatterjee, Chairman, I express difference of opinion as under:

**BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION****BAYS NO. 33-36, SECTOR – 4, PANCHKULA.**

Order dated 25/03/2009 passed by the hon'ble Appellate Tribunal for Electricity, New Delhi in Appeal No. 113 of 2007 and 24 of 2008 in the matter of determination of tariff for non – conventional energy sources – remanding the matter back to the State Commission.

Date of Hearing: 30/04/2009

Date of Order: 18/08/2009

Coram:

Shri Bhaskar Chattrejee, Chairman  
Shri T.S. Tewatia, Member

1. The Haryana Electricity Regulatory Commission (HERC) had passed an order dated 15/05/2007 with respect to determination of Tariff and related issues from non – conventional sources of energy including biomass Aggrieved by the said order of the Commission Chemical International Ltd. & Others filed a review petition which was dismissed by the Commission without granting any relief to the biomass based project developers.
2. Aggrieved by the main order of the Commission as well as the order passed in the review petition Commission Chemical International Ltd. & Others preferred an appeal (appeal no. 113 of 2007) invoking the appellate jurisdiction of the Appellate Tribunal for Electricity, New Delhi. An appeal was also filed by the Distribution licensee in Haryana i.e. Uttar Haryana Bijli Vitran Nigam Ltd. (UHBVNL) against the aforementioned order(s) of the Commission (appeal no. 24 of 2008).
3. The hon'ble Appellate Tribunal for Electricity was pleased to pass a common judgment dated 25<sup>th</sup> March, 2009 in Appeal No. 113 of 2007 and Appeal No. 24 of 2008. The operative part of the order provided, ***“on going through the main order and the review order passed by the Commission we find that there are no reasons for the said findings given in the impugned order. Therefore, it would be appropriate to remand the matter back to the Commission to hear the parties again on these issues and decide the same on the reasons to be recorded in the order. It is made clear that we are not expressing any opinion on these issues. Accordingly, the impugned order dated 15/05/2007 is set aside and the***

***same is remanded to the Commission for deciding these two issues after giving the opportunity to both parties as indicated above”.***

4. Accordingly, the Commission comprising of Shri Bhaskar Chattrejee, Chairman and Shri T.S.Tewatia, who had earlier heard the matter and passed the impugned order, heard the parties i.e. biomass project developers and UHBVNL on 30/04/2009.
5. While issuing this order remanded to us by the hon'ble Appellate Tribunal for Electricity I have been guided by Section 39(2)(c), Section 40, Section 42, Section 61(a), 61(1)(h) Section 62 read with Section 86 (1) (e) of the Electricity Act, 2003 as well as the National Electricity Policy framed there under . Further, I have also relied on the judgments passed by the hon'ble Appellate Tribunal in similar cases (details of the citation are presented at relevant places) The oral as well as written submissions of the parties available with the Commission has also been taken care of while deciding the matter
6. The appellants submitted their contentions along with documentary evidence with regard to fixation of tariff on the parameters mentioned below:
  - a) Fuel Cost
  - b) Rate of Depreciation
  - c) Operating & Maintenance (O&M) Expenses.
  - d) Interest Rate
  - e) Return on Equity
  - f) Capital Cost
  - g) Escalation Rate
  - h) Carbon Credit Entitlement
  - i) Grid Connectivity
  - j) Third Party Sale

On the issue of fuel cost (biomass) it was submitted that the State Commission allowed Rs. 1600 / tonne whereas even at that point of time when Commission passed the order now set aside by the hon'ble Tribunal, the average cost of biomass mix was a little over Rs. 1800/tonne. This was also supported by the Nodal agency for promotion of renewable energy in Haryana i.e. HAREDA. It is but natural that when demand for goods and services rises wherein supply is inelastic the prices have a tendency to spiral upwards. The current survey reveals that the average cost of biomass mix is Rs. 2200 / tonne (current market price). As no power project can be economically viable if it has to carry fuel risk, even the thermal power projects whose tariff is determined by the Central Commission (CERC) and State Commission (SERC) fuel i.e. coal and cost of transporting the same from pithead to thermal station site

including coal lost in transit and all taxes, cess, royalty, levies etc. is pass through. Consequently, either Commission should determine two part tariff considering fuel as a pass through cost or allow fuel cost at Rs. 2200 / tonne.

Depreciation & O&M expenses should be considered @ 7.84% per annum and O&M @ 7% of the Capital Cost as decided by the hon'ble Appellate Tribunal in the case of Chhattisgarh Biomass Energy Developers Association & Others Versus Chhattisgarh State Electricity Regulatory Commission 7 Others, 2007 APTEL 711, which has also been followed by the hon'ble Tribunal in South Indian Sugar Mills Association Versus Karnataka Electricity Regulatory Commission & Others, 2007 APTEL 126.

The State Commission has determined tariff in the impugned order dated 15/05/2007 based on a Capital Cost of Rs. 42.9 Million per MW. As against this the current cost as per quotations obtained from the plant and equipment supplier including the high cost of land prevailing in Haryana is in the region of 50 Million per MW. Consequently, the same should be considered otherwise it will be next to impossible to set up any project or arrange project finance for the purpose.

On the issue of interest cost on working capital loan as well as long term loan, it was submitted that given the high risk factor in non – conventional energy generation, the rate should be considered at 13% and 12% respectively. This is also the prevalent rate at which funds are available to the biomass project developers.

With regard to Return on Equity (ROE) it was submitted that the universal practice is to allow tax as a pass through. Thus Income Tax/ Minimum Alternate Tax should be allowed while reckoning with ROE. The CERC Regulations on Determination of tariff too provides, "Tax on income streams of the generating company or the transmission licensee, as the case may be, from its core business, shall be computed as an expense and shall be recovered from the beneficiaries". Thus the same principle ought to be followed by the State Commission too.

Further, it was submitted by the petitioner (biomass based energy developers) that the State Commission allowed a tariff escalation of 2% per annum. Whereas the actual escalation is in the range of 10% which may be allowed.

On the issue of Carbon Credit the State Commission in the impugned order(s) instead of deciding upfront has left the matter open i.e. to be decided at a subsequent stage. It was submitted that Carbon Credit Benefit earned by the developers ought to be retained by the developers, as these are the benefits available to the person using environmental friendly and non – polluting energy sources and acts an incentive to the persons taking the risk. Any sharing will defeat the very purpose of any such incentive mechanism.

It was further submitted that the cost of Grid Connectivity should be entirely borne by the transmission / distribution utilities in line with the provisions of the Electricity Act, 2003 and the National Electricity Policy framed there under.

In addition to the above, the biomass project developers also submitted that as per the provisions of the Electricity Act, 2003 Generation is a de – licensed activity and hence they are free to sell power to a person of their choice. Thus they are under no obligation whatsoever to sell power to the Distribution Licensees in the State of Haryana. Consequently, the State Commission is requested to clarify that the biomass based generation projects are free to sell power to a third party i.e. other than the distribution licensee(s) UHBVNL & DHBVNL in Haryana.

Consequently, the tariff based on the above parameters / principles may be allowed to the biomass based project developers in Haryana.

7. On the contrary the distribution licensee in Haryana i.e. UHBVNL / DHBVNL argued that the tariff allowed should not be more than Rs. 3.32/Unit as per the rate indicated in the consultation paper floated by the State Commission. The Distribution licensees also objected to the Commission's order providing 2% of the energy injected as wheeling charges without considering transmission & distribution losses. They also submitted that grid connectivity cost should be entirely borne by the project developers else it would tantamount to providing cross – subsidy to such generation projects.

### **Judgment:**

It will be relevant at this stage to mention the statutory provisions as given in the Electricity Act, 2003 on the subject. As per section 86(e) of the said Act the State Commission shall promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee. It was also further stipulated in Section 61 of the Act that the State Commission shall subject to the provision of the Act specify the terms and conditions for determination of tariff for promotion of co-generation and generation of electricity from renewable sources of energy.

In compliance with Section 3 of the Electricity Act, 2003 the Central Government has notified the Tariff Policy on 6.1.2006 in continuation of the National Electricity Policy notified on 12.2.2005. Section 6.4 in the said policy

deals with the non-conventional sources of energy including co-generation, which is reproduced as under:-

- (1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage for purchase of energy from such sources taking into account availability of such resources in the region and its impact on retail tariffs. ....

It will take some time before non-conventional technologies can compete with conventional sources in terms of cost of electricity. Therefore, procurement by distribution companies shall be done at preferential tariffs determined by the Appropriate Commission

- (2) Such procurement by Distribution Licensees for future requirements shall be done, as far as possible, through competitive bidding process under Section 63 of the Act within suppliers offering energy from same type of non-conventional sources. In the long-term, these technologies would need to compete with other sources in terms of full costs.”

Further, Section 61(a) of the Act provides that, “The Appropriate Commission shall be guided by the “principles and methodologies specified by the Central Commission for determination of the tariff applicable to the generating companies and transmission licensee””.

**Accordingly, I determine the various parameters / principles and the resultant biomass based generation tariff as under:**

- a) Fuel Cost:** It is a fact that there is no organized market for biomass mix in Haryana. Experience has proved that as the demand for biomass got momentum from the paper industry and now electricity generation the cost of biomass which a decade back was considered as agriculture waste and hence no economic valuation was attached to it in the agrarian economy of Haryana. However, with technological development the same biomass mix has become important fuel. The Commission, while passing the impugned order by majority under section 92(3) of the Electricity Act (wherein the undersigned had attached dissenting note) considered cost of biomass mix @ 1600 / tonne as per HAREDA’s submission based on data collected from the District Administration. HAREDA too at review stage as well as at 1<sup>st</sup> Appeal before the hon’ble Appellate Tribunal failed to establish beyond doubt the cost of biomass fuel. The same agency of the State Government has now submitted the following statistics to the Commission.

Type (Price in Rs/Tonne)	Minimum Price	Maximum Price	
Rice Husk	2508	3467	
Rice Straw	988	1400	
Wheat Straw	1672	2579	
Cotton Stalk	1013	1425	
Mustard Stalks	1725	2625	
Arhar Stalks	1117	1542	
Average	1504	2173	

The availability of different biomass, depending on the soil and regional cropping pattern, as well as the 'mix' will vary from region to region even within the State. Consequently, considering the fact that efforts of the Government both at Centre and State including the efforts made by the Commission has met with modicum of success i.e. Letter of Intent was issued for almost 700 MW, even after 2 to 3 years no project has taken off. The reasons are not far to seek, no project finance is possible in case the bankers / fanciers sees that the tariff does not even cover fuel expenses. Resultantly, no one including the promoter well take such huge risks. Consequently, considering the responsibility vested in us by the preamble of the Act itself i.e. promotion of efficient and environmentally benign policies and clause 5.2.20 of the National Electricity Policy framed there under i.e.

*“Feasible potential of non conventional energy resources, mainly hydro, wind and biomass would also need to be exploited fully to cerate additional power generation capacity. With a view to increase the overall share of non conventional energy sources in the electricity mix, efforts will be made to encourage private sector participation through suitable promotional measures”*

Despite the fact that the Act was in place in 2003 and the National Electricity Policy and Tariff Policy soon thereafter, in Haryana the share of non conventional in the energy basket of the State is not even 0.5% as against 10% of the total demand stipulated by the Commission itself.

In order to resolve the issue and in conformity with Section 61(a) and Section 61(h) I rely on draft RE Tariff Regulations, 2009 (No. L-7/186(201)/2009 – CERC dated 16<sup>th</sup> September, 2009. Regulation 44 (Fuel Cost) provides as under:-

*“Biomass fuel price during the first year of control period (FY 2009-10) shall be as presented in the table below and shall be linked to index formula as specified under Regulation 45. 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 developer.*

State	Biomass Price (Rs / MT)
Andhra Pradesh	1231
<b>Haryana #</b>	<b>2039</b>
Maharashtra	1694
Madhya Pradesh	1222
Punjab	1967
Rajasthan	1807
Tamilnadu	1715

# Biomass price in Haryana

It is evident from the above table that the Central Commission, after considerable efforts and discussions has established biomass price in different states of the country. **Consequently, for the purpose of determining tariff with respect to the biomass based electricity generation in Haryana I consider the fuel cost as Rs. 2039/Tonne.**

The contention of the power utilities that the biomass based energy tariff ought to be Rs. 3.32/kWh as per the consultation paper floated by the Commission is frivolous and cannot be taken seriously. The very purpose of the consultation paper was to seek views of the stakeholders and experts on various parameters to be considered for working out the tariff. Based on the views of experts / stakeholders the parameters were finalized and tariff worked out. Otherwise, the Commission would not have called the document referred to by UHBVNL & DHBVNL as a consultation paper instead it would have been a tariff order.

- b) Rate of Depreciation:** The underlying principle of depreciation does not get affected by location of the project as in the case of fuel cost and cost of land which may vary from state to state and region to region. Consequently, depreciation which is to provide for wear and tear of the plant and machinery, hence to generate a corpus for replacement of the same at the end of its useful life. Keeping this in mind and the fact that there ought to be uniformity in treatment of depreciation across the country so that the project risks to the developer is known upfront I, for the purpose of determining tariff in the instant case consider depreciation as decided by the hon'ble Appellate Tribunal in Appeal No. 129 of 2005 and 41 of 2006. **Consequently, in line with the order of the hon'ble Appellate Court the depreciation shall be at the rate of 7.84%.**
- c) Operating & Maintenance (O&M) Expenses:** As observed by me on the issue of depreciation the O&M too ought not to vary from one state to other or one region to other. As O&M is essentially to keep the plant and machinery in a healthy and hence at an optimum efficiency status there cannot be any regional bias in the same. **Consequently, in line with the order of the hon'ble Appellate Court in Appeal No. 129 of 2005 and 41 of 2006 the**

**O&M cost for the purpose of determining generation tariff in the instant case shall be 7% of the Capital Cost.**

- d) **Interest Rate:** The financing cost is an area which should be as near to the actual rates as possible. However, since India is a developing country the rate of interest both for working capital on a short term basis as well as long term debt for project finance, are far from stable. **Consequently, to mitigate the risks as far as possible I, for the purpose of working capital consider interest at the Prime Lending Rate (PLR) of the State Bank of India (SBI) which is around 12.75% as against 13% claimed by the petitioner.** This is also in line with terms and conditions of determining generation tariff Regulations notified by the State Commission in 2008.

As far as long term loan is considered **I allow, for the purpose of determining tariff in the instant case @ 12% being the current rate at which such loans are available to a first generation entrepreneur who have no other balance sheet to leverage hence cannot borrow at a sub – prime rate.**

- e) **Return on Equity:** In the cost plus regime tax on the income of a generating company is considered to be a pass through to the beneficiaries as part of generation expenditure. This practice is in vogue in Haryana too. To the intra – state generating companies in Haryana owned by the State Government and whose tariff is determined by the State Commission Return on Equity is allowed as well all taxes are a pass through. This practice is also followed by the CERC (as per their Regulations on terms and conditions for determining generation tariff) while determining generation tariff. The tariff determined by the Commission has not considered any tax incidence. Consequently, to set the matter at rest and in line with CERC's Regulations **I, for the purpose of determining tariff for biomass based projects in Haryana, consider the ROE @ 16% pre – tax. As the income stream of the biomass projects shall fall within the ambit of Minimum Alternate Tax (MAT) which currently 15% the post tax ROE shall be 18.4% i.e. 16% + 15% MAT).**
- f) **Capital Cost:** The capital cost considered by the Commission in its order set aside by the hon'ble Appellate Tribunal was Rs. 42.9 Million which was again based on the data submitted by HAREDA. It is a fact that in over two years time no biomass based project has taken off in Haryana which puts a question mark on the adequacy of the tariff determined by the Commission in the above mentioned tariff order. HAREDA has now submitted the capital cost of biomass based projects sanctioned by the Indian Renewable Energy Development Agency (IREDA):

**AA Energy Limited:** Rs. 46.5 Million / MW

**Areli Power Project:** Rs. 49.4 Million / MW

As against the above the applicant in the instant petition, based on the quotation of the plant and equipment supplier have claimed capital cost ranging from Rs. 45 Million to Rs. 50 Million.

I am of the considered view that the exact capital cost including cost of land cannot be known unless a few biomass based electricity generation projects are actually set up in Haryana. A perusal of the above reveals a wide variation in data the statistics provided by HAREDA is also not of much help. Consequently, to set the matter at rest in conformity with Section 61(a) and Section 61(h) I rely on draft RE Tariff Regulations, 2009 (No. L-7/186(201)/2009 – CERC dated 16<sup>th</sup> September, 2009. Regulation 34 (Capital Cost Benchmarking) provides as under:-

“The normative capital cost for the biomass projects shall be Rs. 45 Million per MW (FY 2009-10 during first year of Control Period) and shall be linked to index formula as outlined under Regulation 35”. Accordingly, for the purpose of determining biomass based generation tariff **I consider capital cost as Rs. 45 Million / MW along with the capital cost indexation mechanism as per Regulation 35 of CERC Regulations as mentioned above.**

- g) Escalation Rate:** As dwelt at length in Paragraph ‘a’ of the instant order i.e. fuel cost shall be linked to index formula as specified under Regulation 45. 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 developer.
- h) Carbon Credit Entitlement:** Reduction in green house gas is national as well as international agenda and the main focus of Earth Summits. Consequently, with global warming becoming a real threat to the mankind including India, it is essential that all out effort needs to be made to incentivize carbon reduction. Resultantly, it ought to be viewed as an incentive. If incentive earned is ordered to be shared then the purpose of incentive is altogether lost. More so, carbon trading market is in a nascent stage in India with Kyoto protocol coming to an end in a year or so, hence future of Carbon Credit is not yet known leave aside any quantification. **It is also a fact that the project cost considered by the Commission does not include any amount that will be spent on registering the project as CDM project and incurring associated cost in terms of technology for achieving reduction in carbon emission. Hence carbon credit, in case the same accrues, will be solely at the expenditure and managerial efforts of the project developers and which has not entered into the tariff stream in any form what so ever, thus the same, in entirety, shall be retained by the biomass project developer an incentive for fulfilling its social responsibility.**

- i) **Grid Connectivity:** The Electricity Act, 2003 provides fair amount of clarity on the issue of Grid Connectivity. Our notice was invited to Section 39(2), Section 40 and Section 42 of the Act.

**Section 39(2)** provides that the State Transmission Utility (in the instant case Haryana Vidyut Prasaran Nigam Limited) shall ensure development of an efficient, coordinated and economical intra – state transmission lines for smooth flow of electricity from generating system to the load centers. While **Section 40** of the Act provides that it shall be duty of the transmission licensee to build, maintain and operate an efficient, coordinated and economical system of intra – state transmission. However, as one of the objectives of small biomass based electricity generation project is also ‘distributive generation’ i.e. generation at the load centre (where demand is) to minimize transmission losses, hence transmission network in the instant case ( 33 KV and above) may not come into the picture at all, reference needs to be made to **Section 42** of the Act which provides that – it shall be the duty of the distribution licensee to develop and maintain an efficient, coordinated and economical distribution system in his area of supply.

Before I part with my judgment on this issue it would be appropriate to refer to the contentions made by the power utilities at the time of hearing i.e. nothing comes free and if such connectivity cost is recovered by them through their ARR and hence tariff the same would amount to providing cross – subsidy to the biomass based project developers. It is a fact that as per section 61(b) of the Act the Commission is to be guided by the fact that “the generation, transmission, distribution and supply of electricity are conducted on commercial principles”. Consequently, costs incurred would certainly be recovered from the users. As far as the issue of cross – subsidy is concerned while designing the transmission tariff such concerns can be taken care of. The current design caters to the single transmission licensee recovering its expenditures from the two distribution licensees i.e. UHBVNL and DHBVNL. As and when the scenario would change the tariff design can be adequately tweaked to avoid any cross – subsidy. **Further, 2% of the energy injected by the biomass project developers shall be deducted as wheeling charges.** The objection of power utilities i.e. this does not include transmission & distribution losses has been carefully considered by me. I find the submission of the power utilities as devoid of any merit. As the biomass based generation projects shall be at the load centre itself there will not be any transmission losses while distribution losses (including transformation loss) shall be negligible. Thus, such distributed generation project will in fact help the distribution companies namely UHBVNL & DHBVNL to reduce their losses which currently is around 25%.

**In the light of the above, I order that the Grid Connectivity shall be provided by the transmission / distribution licensee, as the case may be, for biomass based renewable energy sources in an optimum manner,**

**through their respective capital expenditure plans to be submitted to the Commission.**

- j) Third Party Sale:** As the Central Government has announced its intentions to amend section 11 and other relevant sections of the Electricity Act, 2003 which will facilitate third party sale, I leave the decision to the policies of Government of India as amended from time to time.
- k) Percentage of electricity from non-conventional sources of total consumption of electricity.**

FY 2009-10 and beyond

upto 10%

*The above stipulation shall subject to review by the Commission from time to time based on demand growth and availability of renewable energy yin Haryana.*

- l) Summing up the scenario that emerges are presented as under:**

- Project Cost: Rs. 45 Million / MW
- Plant Load Factor: 80% from 1<sup>st</sup> Year itself.
- Auxiliary Power Consumption: 10%
- Fuel Cost: Rs. 2039 / Tonne.
- Specific Fuel Consumption: 1.36 Kg / kWh
- Debt : Equity Ratio: 70:30
- Interest Rate 12.75% (Short tem) & 12% (Long term)
- Return on Equity: 16% + 15% MAT = 18.4%
- O&M Expenses : 7% of the Capital Cost
- Depreciation 7.84% of the Capital Cost

**m) Tariff in terms of Rs/kWh calculated on the basis of the parameters specified above are as under:**

1	Capital Cost (Rs Mln)	45
2	Debt (%) of capital cost (70%)	32
3	Equity (%) capital cost (30%)	13.5
5	ROE (%) on Equity Capital 18.4%	2.484
6	Tax Incidence	15% MAT
7	Repayment & Interest on Term Loan (Rs Mln)	3.551625
8	Depreciation Rate (7.84 % for first 12 years)	3.53
10	O&M Rate 7% of Capital Cost	3.15
13	Working Capital (Interest 12.75%)	0.35
14	Gross Generation MUs ( PLF 80 %)	7.01
16	Auxiliary Consumption (10 %)	0.70
17	Salable Energy (14-16 MUs)	6.31
18	Cost of Generation (Rs. Million)	13.06
19	<b>Fixed Cost (Rs/Unit)</b>	<b>2.07</b>
20	Specific Fuel Consumption (Kg/kWh)	1.36
21	Biomass (Mln Kg)	8.58
22	Biomass Rate (Rs/Kg)	2.039
23	Biomass Cost (Rs Mln)	17.49
24	<b>Fuel Cost (Rs/Unit)</b>	<b>2.77</b>
25	<b>Tariff (Rs/kWh) Fixed + Variable</b>	<b>4.84</b>

**Thus the per unit (kWh) sale rate of biomass based energy as per the details provided above shall be a single part of Rs. 4.84 /Unit.**

Date: 18<sup>th</sup> August, 2009

Place: Panchkula.

T. S. Tewatia  
(Member)

ORDER

In terms of section 92(3) of the Electricity Act, 2003 (Act 36 of 2003), the views of Sh. Bhaskar Chatterjee, Chairman, will be the order of the Commission.

This order is signed dated and issued by the Haryana Electricity Regulatory Commission on 6/11/2009.

Date: 6/11/2009

Place: Panchkula

T.S. Tewatia  
Member

Bhaskar Chatterjee  
Chairman