



ASSAM ELECTRICITY REGULATORY COMMISSION

FILE NO. AERC. 259/2007

PETITION NO. _____

ORDER SHEET

04.03.2008

Before the Assam Electricity Regulatory Commission

ASEB Campus, Dwarandhar,
G. S. Road, Sixth Mile, Guwahati – 781 022

Petition No. 10/2007

M/s Amrit Bio Energy and Industries Limited

— Petitioner

In the matter of

A Petition filed by the Petitioner for finalisation of tariff for the sale of 10 MW (Net) biomass based Power to the Assam Grid with special consideration for Renewable Power as per The Electricity Act, 2003

AND

In the matter of

Hearing on the Petition filed by the Petitioner on 08.01.2008 and 05.02.2008 respectively.

Present during hearing

- (1) Shri Sankar Prasad Banerjee
- (2) Shri Milon Mukherjee
- (3) Shri Sarju Acharya

— for the Petitioner

- (1) Shri P. K. Hazarika
General Manager (Com-T),
ASEB
- (2) Shri Kumud Goswami,
Senior Manager (Com-T),
ASEB

— for Respondent ASEB

- (1) Shri H. Debnath,
Deputy General Manager – II,
Office of the MD, AEGCL

— for Respondent AEGCL

- (1) Shri R. K. Singha,
Deputy General Manager

(2) Shri K. Goswami,
Senior Manager
— for Respondent CAEDCL

BEFORE

Shri H. Dutta
Member, AERC

Shri J. P. Saikia
Chairperson, AERC

ORDER

04.03.2008 1 BACKGROUND:

The present Petition has been filed by Shri Milan Mukherjee, General Manager – Corporate for Amrit Bio Energy and Industries Limited, 55, Ezzra Street, Kolkata, (hereinafter called “the Petitioner”) on 9th August, 2007 seeking approval of Tariff for the proposed 10 MW (net) Bio-Mass based power project of Morigaon within Licensee area of Central Assam Electricity Distribution Company Limited under Section 62(a) of the Electricity Act, 2003.

Central Assam Electricity Distribution Company Limited (CAEDCL) who intended to purchase entire energy generated by the project, Assam State Electricity Board as bulk purchaser and supplier of Electricity for the state of Assam and Assam Electricity Grid Corporation Limited (AEGCL) with responsibility to provide connectivity to the State Grid for evacuation of power from the projects were Respondents for the Petition.

The Petition was admitted and registered as No. 10/2007 on 1st October, 2007.

Directions were issued to the Petitioner under clause 10(3) of the Assam Electricity Regulatory Commission (Conduct of Business) Regulations, 2004 as below :

- i. To serve copy of the Petition to the Respondents.
- ii. To issue public notice inviting comments / observation from interested person in connection with the proposed project through one daily English and one Assamese language newspaper having wide publication within 7 days.

As per the directions of the Commission, the Petitioners published the public notice on 12.10.2007 at The Sentinel (English daily) and Azir Asom (Assamese daily) inviting objections/comments from interested parties within a period of 21 days of publication. The Petitioners served copies of their Petition to the Respondents.

No response was received by the Commission from public regarding this project.

The ASEB and CAEDCL filed reply before the Commission as Respondents.

2 LEGAL FRAMEWORK & REFERENCE DOCUMENTS:

2.1 The Electricity Act 2003 : In compliance with section 3 of the Electricity Act 2003, the Central Government notified the Tariff policy in continuation of the National Electricity Policy (NEP) notified on 12th February, 2005 vide Resolution No.23/2/2005-R&R(Vol.III) dated January 6th, 2006.

2.2. The National Electricity Policy has set the goal of adding new generation capacity of more than one lakh MW during the 10th and 11th Plan periods to have per capita availability of over 1000 units of electricity per year and to not only eliminate energy and peaking shortages but to also have a spinning reserve of 5% in the system. Development of the power sector has also to meet the challenge of providing access for electricity to all households in next five years.

2.3. It is, therefore, essential to attract adequate investments in the power sector by providing appropriate return on investment as budgetary resources of the Central and State Governments are incapable of providing the requisite funds. It is equally necessary to ensure availability of electricity to different categories of consumers at reasonable rates for achieving the objectives of rapid economic development of the country and improvement in the living standards of the people.

2.4 Section 3 (1) of the Electricity Act 2003 empowers the Central Government to formulate the tariff policy. Section 3 (3) of the Act enables the Central Government to review or revise the tariff policy from time to time.

2.5 The Act also requires that the Central Electricity Regulatory Commission (CERC) and State Electricity Regulatory Commissions (SERCs) shall be guided by the tariff policy in discharging their functions including framing the regulations under section 61 of the Act.

2.6 Section 61 of the Act provides that Regulatory Commissions shall be guided by the principles and methodologies specified by the Central Commission for determination of tariff applicable to generating companies and transmission licensees.

2.7 The Tariff Policy: The Tariff Policy Notified by the GOI has emphasis on the need of promotion for utilization of non conventional sources of energy generation including Co-generation:

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. Such percentage for purchase of energy should be made applicable for the tariffs to be determined by the SERCs latest by April 1, 2006. 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 tariff determined by the Appropriate Commission.

2.8 The Commission has already notified T&C for Tariff Regulation for generating stations which are in line with the CERC T&C regulation. In absence of any specific regulation for Non Conventional Energy projects, the Commission prefers to refer to the regulation whenever applicable with an eye to give a preferential treatment for attracting investment in this sector.

2.9 The Commission has already taken steps to notify the minimum percentage that required to be drawn from non conventional sources of energy by formulating a draft regulation which is under process of consultation. Further due to absence of existing Biomass based project for reference of different technical & financial parameters, the Commission felt it necessary to refer to synonymous orders of other SERCs. As per the information of the Commission, the State of Andhra Pradesh is the most forward state in harnessing the non conventional energy resources. Most notable in this aspect is the almost 100% utilization of raw material (Biomass). Due to this reason, competition has taken place in a most healthy manner in the state for which the concerned Commission is in a position to arrive at most reasonable and rational parameters both in terms of technical & financial aspects of Non Conventional power generating projects. Considering this, the Commission found it most rational to refer to the Order of APERC dated March 20, 2004 for calculating tariff in addition to the CERC and AERC T&C regulations.

3 HEARING:

The Commission fixed hearing on 8.01.2008 at the Commission's office.

During the hearing, Shri Shankar Prasad Banerjee, Shri Milan Mukherjee and Shri Sarju Acharya, for Petitioner Amrit Bio-Energy &

Industries Ltd. appeared before the Commission.

Shri P. K. Hazarika, General Manager (Com-T), ASEB and Shri Kumud Goswami, Sr. Manager (Com-T), ASEB, appeared on behalf of ASEB.

Shri H. Debnath, DGM-II, O/o MD, AEGCL, Guwahati, appeared for AEGCL.

Shri R. K. Sinha, Deputy General Manager, CAEDCL and Shri K. Goswami, Senior Manager appeared for CAEDCL.

The Petitioner submitted written reply to the points raised by ASEB vide their letter No. GM (Com)/AERC-AMRIT BIO/NCVE 2007/7 dated 16/11/2007. Copy of their written submissions were provided to the Respondents namely, ASEB, AEGCL and CAEDCL.

Representative of AEGCL informed during hearing that they have not received the tariff Petition, DPR and other documents filed by the Petitioner before the AERC. The Petitioner, however, informed that all such connected papers have already been submitted to the AEGCL. The Commission directed the Petitioner to furnish the same to AEGCL immediately and AEGCL to furnish their reply / comment within 7 (seven) days.

Representative of ASEB informed that they have not received copy of letter of the Petitioner No. ABEIL/SEC/AERC/07/660 dated 01/01/2008 addressed to the Secretary, AERC, with copies to ASEB and CAEDCL. In this letter the Petitioner stated that the voltage level at the power injection point in the grid substation has been shown as 132 KV (vide Para 2 of Page 109) of the DPR submitted by them with their PPA Application dated 9th August, 2007. This should be read as 33 KV instead of 132 KV.

As per direction of the Commission, the Petitioner furnished copy of this letter to the representatives of ASEB, AEGCL, CAEDCL.

Thereafter, for the Petitioner, Shri Shankar Prasad Banerjee explained point by point their written submission dated 8th January, 2008. He requested the Commission to consider their prayer.

In reply of the Petitioner, Sr. Manager (Com-T), ASEB submitted that (a) as the Petitioners have revised the DPR, they (the Petitioner) may be directed to submit a revised DPR as some figures are not the same as to their original Petition, (b) Debt Equity Ratio should be 75 : 25 and not 70 : 30, (c) O & M expenses should be within 4% per annum, (d) ROE should be lower than 14%.

After hearing the Petitioner and the Respondents, the Commission directed that the Respondents may make further submission before the Commission on the reply of the Petitioner dated 08.01.2008 and on the letter No. ABEIL/SEC/AERC/07/660 dated 01.01.2008, if they want to do so within 10 days from date of this order.

The Commission further directed the Petitioner to give a realistic figure of PLF and also to submit test report of various samples of fuel (rice husk) in dry and wet form so that the average cost of fuel can be reasonably ascertained. The Petitioner agreed to submit additional information within 15 days from the date of this order.

Next date of hearing was fixed on 05.02.2008 at 11.30 A.M.

In the next hearing dated 5.02.2008, Shri Shankar Prasad Banerjee, Shri Milan Mukherjee and Shri Sarju Acharya, for Petitioner Amrit Bio-Energy & Industries Ltd., appeared before the Commission.

Shri P. K. Hazarika, General Manager (Com-T), ASEB and Shri Kumud Goswami, Sr. Manager (Com-T), ASEB, appeared on behalf of ASEB, hereinafter called Respondents.

Shri H. Debnath, DGM-II, O/o MD, AEGCL, Guwahati, appeared for AEGCL, hereinafter called Respondents.

Shri R. K. Sinha, Deputy General Manager, CAEDCL and Shri K. Goswami, Senior Manager appeared for CAEDCL (hereinafter called "the Respondents").

Shri Milan Mukherjee, General Manager (Corporate), Amrit Bio-Energy & Industries Ltd., made oral submissions on behalf of the Petitioner and also filed written reply before the Commission. Copy of the same was given to the Respondents.

Managing Director, AEGCL, furnished comments/observations on the points raised by the Petitioner vide their letter No. AEGCL/MD/Tech-273/Part/17 dated 5th February, 2008. Copy of the same was given to the Petitioner.

The Commission noted the points raised by the Petitioner.

The Commission noted the points raised by the Respondents.

The Petitioner was again directed to submit test report on fuel (Rice husk) showing the Calorific Value.

4 PLANT PERFORMANCE FOR TARIFF: NORMS OF OPERATION

4.1 Plant Load Factor (PLF): The Petitioner claimed 90% PLF in their Petition which was asserted in their filing during hearing on 8.01.08. PLF of coal based station other than some specific stations under Central Sector Companies are considered at 80% in the CERC notification. The same provisions are also adopted in the AERC Regulations as per the provision of Section 61(a) of the Act. The APERC in their tariff order for different Non Conventional Energy project considered 80% PLF for Biomass Based Project.

The Respondent LAEDCL/ ASEB agreed with the submission of the Petitioner at 90% PLF for the purpose of Tariff calculation. However, the Petitioner in their submission before the Commission on 5.02.08 pleaded for 75% PLF for the purpose of Tariff Calculation citing reason of uncertainties arising out of flood and other natural problems for which fuel supply may be disrupted leading to lower generation. Commission after careful examination on the matter considered the PLF at 80%.

4.2 Incentive for Higher PLF: The Petitioner had not considered any incentive for higher PLF than stipulated in their original submission. As per the Tariff Regulation(s) of CERC & AERC incentive on fixed charge at 21.5 paise/kwh is allowable. The APERC also retained this provision for Non Conventional Energy Biomass project.

The Petitioner in their initial submission estimated the PLF at 90% without any incentive component which was reduced to 75% in subsequent submission at the behest of the Commission. The Commission considered 80% PLF as most appropriate keeping in mind the regulations in force. As the tariff from the station will be charged at single part basis, as such the Commission found no reason to separately grant incentive for higher PLF above 80%. For Generation of energy beyond 80% PLF in any year will have to be supplied to the LAEDCL/ASEB at the tariff rate of the respective year. Tariff Calculation sheet is attached with the order vide Annexure I, II, III. Any recovery beyond the stipulated PLF shall be taken into consideration during the first review after five year of operation for necessary adjustment in the subsequent period.

4.3 Auxiliary Consumption: The Petitioner in their submission pleaded for 9% auxiliary consumption on the gross generation. The Respondent LAEDCL had not commented against the claim. In the Tariff Regulation(s) of CERC and AERC auxiliary consumption for different type of thermal coal based generating stations are stipulated as below

With Cooling Tower -----	9%
Without Cooling Tower -----	8.5%

The APERC in their Order stipulated 9% auxiliary consumption for Biomass Based power station.

Considering all aspect the Commission granted 9% auxiliary consumption on gross generation.

4.4 Station Heat Rate: The Petitioner in their initial submission of calculation of tariff considered a station heat rate of 4000 Kcl/kwh. During the first hearing on 8.01.08 the Petitioner asserted that SHR of 4000/kwh is most reasonable. The Respondent, however, contended that the station heat rate claimed by the Petitioner is higher and requested to submit required information in support of their claim. The Petitioner submitted documents from turbine manufacturer M/S Cethar Vessels (P) Ltd. which work out to be 3581Kcl/kwh

As per the CERC Tariff Regulation, the station heat rate for different coal based thermal generating stations other than some specific stations are as below

- (i) Coal fired station ----- 2500 kcal/kwh
- (ii) Lignite fired station (with different moisture multiplying factor).
 - For lignite having 50% moisture: Multiplying factor of 1.10
 - For lignite having 40% moisture: Multiplying factor of 1.07
 - For lignite having 30% moisture: Multiplying factor of 1.04

The APERC had worked out a station heat rate for Biomass based project at 3700 KCl/kwh. The submission of the Petitioner supported with the manufacturer rating is almost in line with the approved figure of APERC considering a degradation factor of 5% during the tariff period. The Commission approved Gross station Heat Rate of 3724 Kcl/kwh for the tariff period.

4.5 Connectivity To Grid: The Petitioner in their submission proposed to connect the generating unit to the nearest 132 KV Baghjap Substation through a 132 KV transmission line of approx 1 km length. However, in their subsequent submission during hearing revised the same and proposed to connect the station through a 33 KV line to the nearest 132 KV Baghjap Sub Station under AEGCL.

The existing capacity of the substation is 2x 16 MVA. The peak demand is in the order of 16 MW and off-peak demand around 9 to 10 MW. The substation is feeding entire Morigaon District of CAEDCL which is also connected to LAEDCL 33 KV network which can now be extended to

Guwahati City 33 KV network. As such the proposed delivery of 10MW power can be consumed at below 33KV level.

The Commission approved the connectivity at the 33 KV Bus of Baghjap 132 KV substation under AEGCL.

4.6 Metering Arrangement: The interconnection point between the generator and AEGCL for transfer of power shall be the 33 KV point of 132/33 KV Baghjap substation. The main meter for the transaction shall have to be installed as per the provision of CEA Metering regulations and AERC (Assam Electricity Grid Code) Regulations 2004 in consultation with the State Load Dispatch Center (SLDC).

4.7 Scheduling: As this order has fixed the tariff as single part instead of two part as per prevailing two part tariff, the Commission is of the opinion that in order to attain maximum benefit from the station in terms of availability, the machine must operate as a must – run station. Accordingly, SLDC should provide scheduling as per their declared availability.

5. ELEMENTS OF TARIFF:

5.1 Capital cost: For the 11 MW project, the Petitioner claimed a capital cost of Rs 4738 Lakh which is stated to be inclusive of Interest During Construction (IDC) and Working Capital (WC), and accordingly, the cost per MW comes to be Rs 430.72 Lakh. The Respondent in their submission stated that the capital cost should not be more than Rs 4 Cr/MW on the ground that there involves no special technology than conventional plant at the prevailing market rate. In absence of any benchmarking capital for such type of small plant, obvious reference was made from the APERC order. APERC in their order had allowed the capital cost of Rs 4Cr/ MW in the year 2004. Taking into consideration an annual escalation of at least 5% annually, the cost in the year 2008 will be Rs 4.86 Cr/MW. Considering this the Commission find the capital cost as claimed in the Petition as reasonable and considered for the tariff purpose.

5.2 Debt Equity Ratio: The Petitioner claimed the debt equity ratio for tariff at 70:30. The Respondent in their submission argued that the ratio should be 75:25 which is in line with the MNRE policy for project financing. For conventional power project the ratio is 70:30 which is in line with CERC Regulation and adopted by the AERC. The APERC also adopted the same 70:30 ratio in their Order under reference. As such, the Commission considered it prudent to retain the same ratio of 70:30 for this project.

5.3 Return on Equity (ROE): The Petitioner in their submission has claimed ROE at 14% on equity component of investment. The Respondent

in their submission stated that the ROE should be less than 14% stating reason of lowering of interest regime of the financial market. Further they argued that the CERC is in the process of reviewing the ROE which is most likely to be reduced in their subsequent revision. The present CERC regulation allowed 14% ROE which is also adopted by the AERC as maximum level of ROE. The APERC also granted 14% ROE in their order under reference. As such, the Commission considered it appropriate to allow the 14% ROE.

5.4 Interest on Debt: The Petitioner in their Petition had claimed interest @ 12.25% for the debt component of their investment. The Respondent in their submission argued that the rate should be around 9% taking into consideration of different subsidy for MNRE schemes and incentive to projects located in NE region. The Petitioner in their subsequent submission further argued with latest MNRE circular for incentive No F. No. 14/8/2004-SHP that their claim of 12.25% is quite reasonable considering the prevailing situation.

The Commission noted that the latest MNRE interest rate for Biomass Based station is 12.75% as per the Notification under reference. In the Notification a 0.5% additional rebate on interest rate is allowed for project in NE region. Considering this the Commission found it reasonable to grant the interest of 12.25% on debt component of investment.

5.4.1 Repayment period of debt: The Petitioner in their Petition had shown a nine year loan term with two year moratorium. During the hearing they further stated that this is as per their final tie up with financier. As such, the Commission considered it appropriate to calculate the annualized tariff with 7 year repayment term considering the two years moratorium period as gestation period of the project.

5.5 Treatment of Subsidy: The Petitioner in their submission has not mentioned about the treatment of subsidy from MNRE as per the Notification of Government of India MNRE No F. No. 14/8/2004-SHP 26th April 2007. As per the Notification the direct subsidy for Biomass Based project is Rs 25 (Lakh) per MW^{0.746}. The allowable subsidy for the 11 MW project will be as per the table-1:

	Subsidy of MNRE										
mw	1	2	3	4	5	6	7	8	9	10	11
amount Rs											
Lakh	25	39.12	50.83	61.22	70.71	79.55	87.88	95.79	103.37	110.65	117.67
Rs/mw	25	19.56	16.94	15.30	14.14	13.26	12.55	11.97	11.49	11.06	10.70

As per the Notification of GOI under reference, the subsidy granted shall be reimbursed to the financial institution granting loan to the project and to be treated as debt repayment on completion of the project after certification. Considering the provisions in the Notification, the Commission found it appropriate to pass on the benefit of the subsidy to be granted by GOI to the ultimate consumer and the subsidy amount eligible for the project i.e. Rs 117.67 Lakh is to be considered as reduction of debt in the first year of operation for calculating tariff.

5.6 Depreciation & Advance Against depreciation (AAD): The Petitioner in their Petition has claimed annual depreciation at 3.6% on 90% depreciable assets. This includes cost of Rs 45 Lakh towards land cost as per the DPR. The useful life of the project is arrived at 25 years which is same for conventional thermal (Steam) project. The Respondent in their submission submitted that the depreciation rate should be 3 % and land cost should be excluded from the calculation of depreciation.

No AAD has been claimed by the Petitioner to accommodate the higher repayment in the initial years of operation perhaps because the terms of loan repayment by the Petitioner with the financial institution is valid for the initial 9 years of operation including moratorium period of two years.

The Commission considered the claim of the Petitioner reasonable at the depreciation rate of 3.6% which is in line with the conventional thermal (steam) station and granted the same for the purpose of tariff calculation.

The Commission further examined the provision of Advance Against Depreciation (AAD) in the prevailing tariff regulation(s) of CERC & AERC. From the regulations, it is transpired that AAD can be considered with a maximum limit of 10% repayment of loan including depreciation. It can be inferred from the regulations that the AAD can't be considered if loan repayment schedule is less than 10 years excluding moratorium. Further, the Petitioner has prayed for tariff only for initial ten years of operation instead of full useful life of the assets. The AAD if granted, in the initial years to accommodate higher loan repayment, it is to be adjusted in the remaining life of the assets which could not be possible when tariff is calculated only for initial 10 years of operation. As no claim on this aspect has been made by the Petitioner, it is considered that the cash flow deficit of initial years of operation will be met through general business practice and the Commission decided not to consider AAD for tariff calculation.

5.6.1 Treatment of cost of land in the calculation of 90% depreciable assets: As mentioned above, the Petitioner had not deducted the cost of land @ Rs 45 Lakh in the calculation of 90% depreciable assets. The

CERC & AERC regulations states that the cost of land should be excluded in the calculation. As such, the Commission found it justified to consider deduction of Rs 45 Lakh land cost in calculation of 90% depreciable assets for the calculation of annual depreciation which was arrived at Rs 169 Lakh/year.

5.7 Operation and Maintenance expenditure (O&M Expenses): The Petitioner claimed O&M expenses @ 4.6% of initial capital cost. The Respondent in their submission stated that the rate should be around 3% of capital cost. For conventional thermal power station, the O&M cost is considered at 2.5% of initial capital cost by CERC which is also considered as reference by AERC for new projects. The Commission is of the reasoned opinion that the norms adopted by CERC are considered for large size station generally in the order which is of 200 MW to 500 MW. The smaller the size of the station, the larger the O&M expenses which includes salary of personnel. Taking this aspect into consideration the APERC in the order under reference granted 4% O&M expenses including insurance expenses of the assets.

The Commission found it appropriate to grant 4% O&M expenses on the capital cost for the 10 years of operation.

5.7.1 Capital Spare for O&M expenses: The Petitioner in their tariff calculation has shown a figure of capital spare in the O&M expenses separately. The Respondents in their reply have not commented on the submission. The Commission after affording due diligence to the claim, observed that the capital spares of some critical items of a station are kept in readiness (inventory) on anticipation that these may be required to avoid longer recovery period of the station in case of outage due to want of spare parts. Keeping this aspect in mind, the CERC & AERC regulations considered an amount of 1% of capital cost escalated at 6% p.a. for the purpose of calculation of working capital requirements to arrive at the interest on working capital (IWC) as a component of tariff.

Accordingly, the Commission decided to consider the claim made by the Petitioner as a part of IWC calculation to the limit of claim.

5.7.2 Escalation on O&M expenses: The Petitioner in their tariff calculation has shown an annual escalation of 5% on the O&M expenses during the tariff period of ten years. The Respondents in their submission have argued for less escalation taking into consideration the prevailing inflation rate. This escalation is normally worked out taking into consideration of prevailing WPI & CPI at the ratio of 45:55. The CERC in their regulations for the present control period 2004 to 2009 has derived an escalation at 4%. The APERC in the order under reference, has considered 4% escalation on O&M charge.

The Commission is of the opinion that 4% cumulative escalation over the initial year expense shall be most appropriate and accordingly, decided to consider for tariff calculation.

5.8 Interest on Working Capital (IWC): The Petitioner in their tariff calculations has shown an amount of Rs 47 Lakh annually as working capital and added to the annual cost. Further an amount of Rs 12 lakh has been claimed as unforeseen expenditure annually for the entire tariff period of 10 years. The Respondent in their submission have not made any comments on the same.

The requirement of working capital is derived for thermal stations as per the regulation to cover the requirements of capital during a full cycle of business from the delivery of power to the receipt of revenue. With a monthly billing cycle, the following components are considered in line with the CERC & AERC regulations to arrive at the working capital requirements.

- (a) Fuel cost for one month at the targeted availability.
- (b) O&M expenses for one month.
- (c) Capital Spare @ 1% of initial capital cost with 6% annual escalation
- (d) Receivable equivalent to two months.

Interest on working capital is being calculated at normative rate of interest @ 12% as per CERC regulations.

The Commission decided that the IWC shall be calculated on the above norm and shall be granted up to the level of the claim.

5.9 Availability of Fuel: The Petitioner has submitted in the Detailed Project Report that surplus biomass resources is available for power generation purpose in Kamrup and Morigaon districts. According to them, the surplus biomass available in tons from forest and other land resources is 116586 and from agro industry (biomass) is 45330 totaling to 161916 tons per year. The power potential available with the surplus wood is about 11.66 MW, and with the Agro-industries residues i.e. rice husk is about 4.53 MW. The total power potential available in Kamrup and Morigaon districts is 16.19 MW.

5.10. Fuel Cost: The Petitioner in their submission for tariff calculation has claimed fuel cost in form of Rice Husk @ Rs 1500 per 1000 kg with an average calorific value of 3200 Kcal/Kg.

The test report on fuel (Rice husk) showing the calorific value was not submitted till the issuance of this order. The Respondent claimed that the fuel cost should be around Rs 900 per 1000 kg. In absence of reliable data due to non availability of any organized market of rice husk, APERC in its

order has considered fuel cost at Rs 1000 per 1000 kg which includes alternate fuel. Considering this aspect, the fuel cost per unit is worked out as Rs 1.55 per unit by AERC.

The Commission made a reference of the NTPC coal based Thermal Stations of Eastern region from where ASEB is now drawing allocated power. The highest energy charge from NTPC Kahalgaon station is at present Rs 1.31/ unit w.e.f December, 2007 (latest revision of coal price). Therefore, the fuel price per unit arrived i.e. 1.55 per unit is more than 18% higher than NTPC station under reference.

5.11. Fuel Cost Escalation: The Petitioner has claimed fuel price escalation at 5% p.a. However, the Respondents in their submission have prayed for allowing escalation @ 3.5% - 4% and not as claimed by the Petitioner. The Commission made a reference of the coal price escalation of last 4 years of different grade of coal and found that coal price annual escalation is in the order of 3% as shown in the table:

as on 15.06.04		Price of Coal Rs/tonne						
Ref: www.coalindia.nic.in/pricing.htm								
Field/Co		Gr A	Gr B	Gr C	Gr D	Gr E	Gr F	Gr G
ECL/Raniganj		1740	1640	1440	1240	770	570	380
ECL/Raniganj		1350	1220	1020	820	620	480	340
ECL/Mugma		1550	1380	1180	980	780	580	380
ECL/SP Mines		1870	1670	1470	1270	850	650	450
ECL/Rajmahal						810	690	550
BCCL		1310	1190	990	820	650	520	370
CCL		1340	1210	1010	830	650	520	370
NCL		1230	1110	910	760	610	480	350
WCL		1320	1250	1160	1100	900	710	540
SECL		1080	1010	860	730	600	470	350
MCL		1050	940	780	650	510	400	290
as on 12.012.2007								
Field/Co		Gr A	Gr B	Gr C	Gr D	Gr E	Gr F	Gr G
ECL/Raniganj		1910	1800	1580	1360	850	630	420
ECL/Raniganj		1490	1340	1120	900	680	530	370
ECL/Mugma		1710	1520	1300	1080	860	640	420
ECL/SP Mines		2060	1840	1620	1400	940	720	500
ECL/Rajmahal						890	760	610
BCCL		1440	1310	1090	900	720	570	410
CCL		1470	1330	1110	910	720	570	410
NCL		1350	1220	1000	840	670	530	390
WCL		1450	1380	1280	1210	990	780	590
SECL		1190	1110	950	800	550	520	390
MCL		1160	1030	860	720	560	440	320
Annualised % Increase during 3.5 years								
Field/Co		Gr A	Gr B	Gr C	Gr D	Gr E	Gr F	Gr G
ECL/Raniganj		2.79	2.79	2.78	2.76	2.97	3.01	3.01
ECL/Raniganj		2.96	2.81	2.80	2.79	2.76	2.98	2.52
ECL/Mugma		2.95	2.90	2.91	2.92	2.93	2.96	3.01
ECL/SP Mines		2.90	2.91	2.92	2.92	3.03	3.08	3.17
ECL/Rajmahal		#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.82	2.90	3.12
BCCL		2.84	2.88	2.89	2.79	3.08	2.75	3.09
CCL		2.77	2.83	2.83	2.75	3.08	2.75	3.09
NCL		2.79	2.83	2.83	3.01	2.81	2.98	3.27
WCL		2.81	2.97	2.96	2.86	2.86	2.82	2.65
SECL		2.91	2.83	2.99	2.74	-2.38	3.04	3.27
MCL		2.99	2.74	2.93	3.08	2.80	2.86	2.96

The APERC in its order allowed 5% escalation considering that the fuel is procured from unorganized sector. The commission is of the opinion that the escalation of this non-conventional fuel is higher than conventional fuel in absence of organized sector. Even if a 1% edge is considered in comparison to the organized coal price, the figure arrived is 4% appears to be reasonable. However, there is some likelihood that with the increase in demand, the cost of non conventional fuel price may go up substantially. Therefore, the commission has decided to consider 5% escalation for the initial 5 years of tariff calculation subject to review for the next five years.

6.0 TARIFF IMPACT ANALYSIS:

The ASEB at present is drawing allocated power to the tune of 4678 MU annually from different sources to meet the demand of three discoms to whom it has obligation to supply power. In a normal scenario the state experiences marginal surplus of power during off-peak hours during summer months from June to October and deficit during winter months. To meet up the shortfall /surplus situation, in addition to the allocated power it purchase power from different power trader through bilateral agreements at rates which are generally decided through competitive biddings in addition to occasional transaction through the mechanism of UI under ABT norms. However, as the trading and UI markets are mostly uncertain in their rates, the Tariff impact analysis is carried out taking into consideration average rate of power purchase including transmission charge and with highest rate of allocated power tariff.

Tariff Impact analysis at the Weighted Average Tariff			
	As per 2007-08 estimation		
1	Average quantity of Power Purchase by ASEB at sources	4678	MU
2	Average rate Excluding Trading Purchase	1.8	Rs/kwh
3	Transmission rate inclusive of CTU & STU	0.54	Rs/kwh
4	Total Average Rate	2.34	Rs/kwh
5	Rate derived after apportioning of CTU Loss 4% & 6.1% STU loss at input of Discom	2.603	Rs/kwh
7	Cost of power purchase + Transmission	1094.65	Cr
8	Add additional generation from New Proposed Station	70.15	MU
9	Considering weighted average rate , additional cost	18.26	Cr
10	Total cost	1112.91	Cr
11	Total Energy available at 33 KV, Discom input from grid	4205.52	
12	Total Energy available at 33 KV, Discom input from grid + Generator	4275.67	
13	Weighted average cost	2.603	Rs/kwh
14	Considering average rate of 3.01 for the additional energy of 70.15 MU	21.115	Cr
15	Total Cost	1115.767	Cr
16	Weighted average cost	2.610	Rs/kwh
17	Marginal cost per unit	0.007	Rs/kwh

6.1 The average rate of power at the source is Rs 1.80/kWh and transmission charge Rs 0.54/kWh. The calculation of tariff impact shows that the additional energy of 70.15 MU from the proposed station shall have an impact of Rs 0.007/kwh on the bulk supply rate of discoms.

6.2 Similarly in the consideration of Tariff impact comparing with the highest tariff rate of @ Rs3.22/kwh from Neepeco's Doyang HEP with the proposed project the overall impact will be a gain of Rs 0.003/kwh on the Bulk supply rate of Discoms.

Tariff impact analysis at the Highest rate Source for Total Energy			
1	Average quantity of Power Purchase by ASEB at sources	4678	MU
2	Maximum rate Excluding Trading Purchase	1.8	Rs/kwh
3	Transmission rate inclusive of CTU & STU	0.54	Rs/kwh
4	Total Average Rate	2.34	Rs/kwh
5	Rate derived after apportioning of CTU Loss 4% & 6.1% STU loss at input of Discom	2.603	Rs/kwh
7	Cost of power purchase + Transmission	1094.65	Cr
8	Add additional generation from New Proposed Station	70.15	MU
9	Considering highest rate , additional cost	22.59	Cr
10	Total cost	1117.24	Cr
11	Total Energy available at 33 KV, Discom input from grid	4205.52	MU
12	Total Energy available at 33 KV, Discom input from grid + Generator	4275.67	MU
13	Weighted average cost	2.613	Rs/kwh
14	Considering average rate of 3.01 for the additional energy of 70.15 MU	21.115	Cr
15	Total Cost	1115.767	Cr
16	Weighted average cost	2.610	Rs/kwh
17	Marginal cost per unit	(0.003)	Rs/kwh

The above analysis shows that the impact on the retail tariff shall be less than one paisa which the Commission considers well within the capacity to promote new Non Conventional Energy projects.

6.3 From the above observations, the Commission approves the Tariff for a period of five years from the initial Date of Commercial Operation which would form a part of Power Purchase Agreement (PPA) along with the parameters approved as below:

Year	Fixed Charge (Rs/kwh)	Energy Charge (Rs/kwh)	Total charge for billing in single part (Rs/kwh)
1 st	1.44	1.57	3.01
2 nd	1.37	1.65	3.02
3 rd	1.31	1.73	3.04
4 th	1.24	1.82	3.06
5 th	1.17	1.91	3.08

6.4 The Commission calculated the Tariff for a period of ten years from the Date of Commercial Operation as prayed for by the Petitioner. However, as explained earlier, the Commission has reason to restrain from announcing the cost of fuel (rice husk) due to the uncertainty in its price in absence of an organized market and decided to limit the same for a control period of five years. It is expected that during the five year period the development in the field of Non Conventional Energy will come to a stage of maturity from the present stage of nascence where this project will be first of its kind in the state of Assam.

With the above analysis, observations and reliefs the Petition stand disposed of.

Inform all concerned.

Sd/-
(H. Dutta)
Member, AERC

Sd/-
(Shri J. P. Saikia)
Chairperson, AERC