Chhattisgarh State Electricity Regulatory Commission

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Petition No. 7 of 2005.

In the matter of determination of tariff and related dispensation for procurement of power from biomass-based generation projects.

Chhattisgarh Biomass Energy Developers Association .... Petitioner

Versus

1. Government of Chhattisgarh .... Respondent No.1
2. Chhattisgarh Renewable Energy Development Agency .... Respondent No.2
3. Chhattisgarh State Electricity Board …. Respondent No.3
4. Jindal Steel & Power Ltd …. Respondent No.4
5. Bhilai Steel Plant, Bhilai …. Respondent No.5

Present : Shri S.K.Misra, Chairman
Shri Sarat Chandra, Member

ORDER

(Passed on 15.1.2008)

The Chhattisgarh Biomass Developers Association (CBDA) which claims to represent 29 promoters of biomass-based electricity generation plants in the State, filed a petition before this Commission on 4.5.2005 for determination of tariff at which the Chhattisgarh State Electricity Board (CSEB or the Board, for short) shall purchase electricity produced by these power plants, and other related dispensation such as, wheeling charges etc., for supply of power to third parties. This was registered as petition No.7 of 2005 and orders were passed in this case on 11.11.2005. The petitioner association and separately four members of the association filed an appeal in the Hon'ble Appellate Tribunal for Electricity (ATE or Tribunal) challenging the Commission's orders and seeking modification in the order in respect of tariff, wheeling and other charges and some other relief. By their judgement and order dated 7.9.2006, passed in appeal No. 20 of 2006, the Hon'ble ATE was pleased to set aside some parts of the order of this Commission and remanded the case back to this Commission. The operative paragraph of the Tribunal's judgement is as under:-

> "In view of the aforesaid discussions, the appeal is partly allowed and the impugned order of the Commission dated November 11, 2005 is set aside to the extent indicated above and the matter is remitted to the Commission *for fresh determination, with regard to the findings of the Commission, which have not been confirmed by us."* (Emphasis added).

Being aggrieved by this judgement and order of the ATE, the respondent Board filed an appeal before the Hon'ble Supreme Court (No. 12 of 2007). The Hon'ble Supreme Court has passed following order in this appeal on 15.1.2007:

> "Heard both sides.
>
> As the matter has been remitted to the Commission, we are not inclined to interfere with the impugned order. Accordingly, the civil appeal is dismissed. However, *we make it clear that the State would be at liberty to raise all the contentions before the Commission and the Commission shall decide the same, untrammelled by any observations made in the impugned judgement*". (Emphasis added).

It is in compliance with the judgement and order dated 7.9.2006 of the Hon'ble ATE and order dated 15.1.2007 of the Hon'ble Supreme Court that this order is being passed.

2. As mandated by the Hon'ble Supreme Court, CSEB was permitted to make their detailed submissions which they did on 15.2.2007; and additional submissions were made on 14.9.2007. Even before the orders were passed by the Hon'ble Supreme Court aforementioned, the petitioner association had already submitted an application on 28.9.2006 seeking compliance of the orders of the Tribunal and made submissions with regard to the issues on which the case had been remitted to this Commission by the Tribunal. In view of the Tribunal's orders that all distribution licensees in the State must purchase power to the extent specified in our order of 11.11.2005, notices were issued to the two other distribution licensees in the State namely, Jindal Steel & Power Ltd (JSPL) and Bhilai Steel Plant (BSP) who were also impleaded as respondents and given opportunity to put forth their case before the Commission. We have heard the parties at length on 6.12.2007 and considered the copious written submissions made by the petitioner association, respondents CSEB and JSPL.

3. Before we come to the various issues and contentions raised by the CSEB before us, it would be necessary to address the important issue of the scope of the remand of the case which has been raised by the petitioner association. On this issue the petitioner and the respondent Board were heard on 24.2.2007. The petitioner association had raised objection to the submissions made by the CSEB on the ground that they were beyond the limited purpose for which the case had been remitted to the Commission by the Hon'ble ATE. Shri Gopal Choudary, Advocate for the petitioner contended that since the appeal had been dismissed by the Hon'ble Supreme Court and they had declined to interfere with the impugned order of the ATE, the judgement and order of the Tribunal dated 7.9.2006 and the matters decided and directions given therein stood unequivocally confirmed and the present proceedings before this Commission could relate only to the matters in respect of which the case had been remitted to the Commission by the Hon'ble ATE. Shri Valmiki Mehta, Senior Advocate, appearing for the CSEB on the other hand argued that the order of the Supreme Court was very clear and could not be subject to interpretation. While dismissing the appeal, the Supreme court has ordered that the Board would be at liberty to raise all the contentions before the Commission and the Commission shall decide the same untrammelled by observations made by the Tribunal in their judgement. The learned senior counsel argued that there cannot be

a restrictive interpretation of this clear directions of the apex court. It was also argued that so far as CSEB was concerned, the Supreme Court was the court of appeal as provided under section 125 of the Act and Order 41, Rule 33 of the Code of Civil Procedure which lays down the power of the court of appeal. As the court of appeal the apex court has 'power to pass any decree or make any order which ought to have been passed or made and to pass or to make such further order other decree or order as the case may require'. On the powers of the appellate court, the learned counsel has cited the rulings of the apex court in the case of Koksingh v/s Deokabai [(1976)1 SCC 388] in which the expression which 'ought to have been passed' used in order 41, Rule 33 has been interpreted and in the case of Chaya v/s Bapusahab [(1994) 2 SCC 41]. After having heard the learned counsels on both sides we have come to conclusion that the orders of the Hon'ble Supreme Court are clear and that as per these orders, we are required to hear all the contentions of the CSEB and decide them, unaffected by any observations made by the Hon'ble Tribunal in their judgement. This would have been very much a case of limited remand, if no appeal was preferred by the respondent CSEB. Confining ourselves to the terms of the limited remand in the face of the order of the Hon'ble Supreme Court, will nullify the second part of the Hon'ble apex court's order that we hear and decide all contentions of the Board unaffected by the observations of the Hon'ble ATE. That we confine ourselves to the points of remand could not be the import of the second part of the order of the Hon'ble Supreme Court even though the appeal has been dismissed. The rejection of the appeal is not on merit and the Hon'ble court while dismissing the appeal have added 'to make it clear' that the Board would be at liberty to raise all the contentions and the Commission has been directed to consider and decide these. We have, therefore, proceeded in this case by the mandate of the order of the Hon'ble
Supreme Court. The CSEB has been permitted to raise issues which they had raised before the Hon'ble ATE and the Hon'ble Supreme Court and we have decided these in this order.

4. The earlier findings of this Commission which have not been confirmed by the Hon'ble ATE are as follows:-

(i) With regard to tariff for purchase of power by the distribution licensees, the Hon'ble Tribunal has directed the Commission to determine tariff as per norms recommended by the CEA for biomass-based generation plants (para 12 of the judgement). The operational norms as recommended by the CEA, which the Commission has been directed to follow in determination of tariff, are as under:-

(a) Capital cost @ Rs.4 Cr. per MW

(b) O&M expenses including insurance to be 7% of the cost of capital with the annual escalation @5%.

(c) Auxiliary consumption to be taken as 10%.

(d) Normative Gross Heat Rate (Kcal/kwh) – 4500 (Station Heat Rate to be taken based on the actual PG Test report of the projects).

(e) PLF of 80% for recovery of the full fixed cost.

(f) Depreciation @ 7.84% p.a. until the debt is repaid. Beyond that 20% is to be spread over the remaining life of the plants (As permitted by the Govt. of India notification relating to Depreciation norms for generating companies dated 29.3.1994).

(g) Specific fuel consumption of 1.36 kg/Kwh in the average calorific value of fuel as 3300 cal/kg).

(ii) The ATE has directed that the fuel cost for rice-husk be taken as Rs.850 per ton in the first year for the 75% of the fuel i.e. rice husk and the price of the supplementary fuel i.e. coal permissible for use at 25% be also taken to obtain the aggregate cost of fuel (para 16 of the judgement).

(iii) It has been directed that the Commission develop a mechanism for fuel cost adjustment so that the variation in cost on actual basis is taken into account (para 16 of the judgement).

(iv) It has been directed that the Commission examine 'the efficacy of dispensing with' cross subsidy surcharge or lowering the rate further, against the Commission's order that cross subsidy surcharge be reduced by 50% (para 18 of the judgement).

(v) The ATE has directed that banking be permitted and the Commission examine and arrive at a suitable formulation and adoption for such banking (para 22-24 of the judgement).

(vi) It has been directed that capping at 105% of the scheduled energy be relaxed and supply be regulated in a manner that 'the annual average PLF does not exceed 100%' (para 25 of the judgement).

The petitioner association has submitted suggestions with regard to these matters. The respondent Board has not only submitted their contentions on the above matters, in respect of which the orders of this Commission have not been confirmed by the Hon'ble ATE, but also in respect of some of the matters which have been decided by the ATE and on which findings and directions have been given. As directed by the orders of the Hon'ble Supreme Court we have dealt with all the contentions raised by the Board.

5. Before we deal with the specific issues raised and contentions made by the respondent Board and other respondents, there is a general issue with regard to the scope of Section 86(1) and Section 61(h) of the Act which needs to be addressed at the outset. It is the contention of the Board that the Act mandates the Commission under the provisions of sub-section (1)(e) of section 86, to promote generation of electricity from renewable sources of energy and also lays down the manner in which the Commission may promote such energy. The provision reads as follows:-

Section 86(1)

"(e) promote co-generation 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".

The Board's contention is that the function of promotion of renewable sources of energy by the Commission is limited to (i) providing suitable measures for connectivity with the grid, (ii) permit sale of electricity to any person, and (iii) mandatory purchase of a specified percentage of energy by the distribution licensee. The Tariff Policy, 2006 has added one more promotional measure in the form of

'differential tariff' for such generators till development of technology makes them competitive. But for the above, no further concessions could be demanded by the petitioners under the above provision. In any case, no concession should be granted to non-conventional energy producers at the cost of the Board. In that connection it has also been contended that the provisions of section 61(b) and 61(d) of the Act which envisage application of 'commercial principles' to the electricity sector and safeguarding the interest of the consumers, have to be kept in view in granting any further concession to such power producers. The Board had raised this issue in appeal before the Hon'ble Tribunal also. We are of the view that promotion of non-conventional energy sources is wide enough to encompass the issues which have been dealt with in our order of 11.11.2005 and which are being dealt with here. If tariff has to be a 'differential tariff', relaxed parameters for determination of such tariff would be necessary. Wheeling charges, cross subsidy surcharge etc. facilitate sale of power to third parties and are well within the scope of the provisions of section 86(1)(e). Banking of energy with the Board is also to facilitate such sale. In fact, we are of the view that there is no concession which the Commission had ordered for the biomass-based power producers are outside the scope of provisions of section 61(h), section 86(1)(e) of the Act or the mandate of the Tariff Policy. We, therefore, do not accept the contentions of CSEB in this regard.

6. As to the issues raised, first, the matters relating to tariff. With regard to determination of tariff a general issue has been raised by CSEB that there is no provision in the Act for determination of tariff for a class of power generators. It has been further contended that the entire scheme of section 62(1) of the Act requires that tariff fixation has to be done in respect of a single generating company or a distribution licensee and cannot be undertaken for a class of generating plants. The exercise of tariff determination has to be undertaken for each individual generating plant taking into account its project cost alongwith a number of components and variables and the technology used etc. The Commission could not, therefore, fix a general tariff for all biomass power producers. The petitioner association, on the other hand, has argued that this was not an issue in appeal and also that there are definite advantages in adopting normative tariffs. The average size of biomass based units being small, it would be difficult to fix tariff in individual cases. Normative tariff would be in the interest of promotion of such power producers. The Hon'ble Tribunal has also upheld the Commission's common tariff approach which need not now be reviewed at this stage. We are in agreement with the petitioner and would continue with the common tariff for biomass-based plants the norms of which have been decided by the Hon'ble Tribunal in their judgement. However, we had taken into account 7.5 MW as the average size of a plant, for determination of tariff and norms were fixed keeping the technical and other parameters of this plant size in mind. This normative size was adopted because most of the biomass-based plants were of this size or below. The CEA Committee considering norms for biomass-based plants had taken into account plants of the size of below 10 MW except for one. Generally, the technical parameters of a higher size plant would be different. The availability of rice husk in this State would also support only small size plants if they have to be viable. Therefore, while we would continue with normative tariff for biomass-based power plants, it would be reasonable to cap the plant size for such tariff at 15 MW. The Commission would like to determine generation tariff for individual biomass–based plants of capacity higher than 15 MW. The common tariff as per this order shall apply to plant size of not more than 15 MW.

7. The norms for determination of tariff based on the operational norms as recommended by a Committee appointed by the CEA have been taken into consideration by the Hon'ble Tribunal (para 12 of their judgement) as given in para 4 above. Certain items need to be re-examined by this Commission as per the directions of the Tribunal. These have been discussed below:

(i) Fuel Cost

The Hon'ble Tribunal has directed the Commission to take the cost of rice husk at Rs. 850\MT and also that the aggregate cost of fuel be obtained taking the cost of 25% of coal alongwith 75% of rice husk. The petitioner has submitted that the landed cost of coal of F-grade was Rs.1200\MT for the year 2005-06. It has been stated that the coal price in the open market and/or in the e-auction of the South Eastern Coal Ltd (SECL) has been taken into consideration since Government of India do not allot coal quota for such plants. In support of the cost of coal they have submitted five copies of invoices of purchase of coal from SECL in open market sales. Copies of certain bills for purchase of coal from traders and transportation bills have also been submitted. The transportation cost of coal has been taken as cost for transportation over a distance of 175 kms on the basis of the distance of some generating plants from Gevra coalmines of SECL, which is said to be the main source of coal. The cost of coal has been taken as Rs.670\MT in 2005-06 and the cost of transportation including service tax and unloading charges as Rs.530\MT. The landed cost of coal is proposed by the petitioner as Rs.1200\MT which is approved for use upto 25% in the plants. The cost of fuel has been worked out accordingly.

However, two developments have taken place in the meantime which we have to take into account. First, the Ministry of New and Renewable Energy vide their orders F.No.14/8/2004-SHP dated 26.12.2006 and of the same number dated 26.4.2007, has promulgated the scheme for promotion of grid interactive power generation projects based on renewable energy sources for 2006-07 and 2007-08 respectively. In this scheme for biomass-based projects the maximum fossil fuel permitted is only 15% of the total energy consumption in KCals or as per the DPR whichever is less. This scheme modifies the earlier scheme which was operative during 2005-06. Therefore, for all new plants registered after 26.12.2006 the new norms of 15% consumption of coal shall be applicable. The cost of fuel for such plants has been worked out with coal content accordingly. Secondly, the Government of India has in the meantime granted linkage of coal to biomass-based generation plants also. The cost of coal received through linkage is likely to be less than the cost of coal obtained from the open market and hence tariff for these plants should be worked out separately. We had asked the petitioner association to furnish details of plants which have been granted coal linkage and the likely cost of coal for such plants. As per the information furnished by the association only one power plant, viz. KVK Energy has been approved coal linkage and the landed cost come to Rs.1150 per MT. The difference in cost being marginal, we propose not to take the difference into account.

(ii) Fuel Cost Adjustment (FCA)

The ATE has directed that a suitable fuel cost adjustment mechanism be developed by the Commission to take care of the variation in fuel cost on actual basis as and when it occurs. The petitioner has suggested a fuel cost adjustment formula and has requested that such adjustment be done every quarter. The CSEB has vehemently opposed any fuel cost adjustment formula on the following grounds:

(i) There should be a VCA formula rather than a FCA formula, which should normally take into account all the variables and the increase in the cost of fuel. A VCA formula should exclude annual increase in cost of fuel which is being allowed at 5%.

(ii) In the Commission's order dated 11.11.2005 in which tariff has been determined for the period of ten years upto 2014-15 indicating separately the variable cost and the fixed cost, there is a provision for review of tariff after five years, on the request of a biomass-based generator or a licensee. Thus there is a provision of 5% escalation of fuel cost every year or a review after five years. There is, therefore, no need for FCA.

(iii) As per the figures of CII for the last five years, the rate of inflation has been around 5%. It has gone down further to around 4% this year. In this situation a 5% increase in the fuel cost is adequate till 2009-10 when the tariff is due for review.

The Commission has given serious consideration to this issue and has come to the conclusion that adoption of a fuel cost adjustment formula would not be practicable. First, as has been argued by the respondent Board that adequate justification does not exist for an FCA and that the 5% increase in fuel cost every year which is more than the present rate of inflation should be adequate. The O&M expenses have been allowed at a higher rate of 7% with an annual escalation 5%. Secondly, the fuel cost adjustment exercise has to be undertaken for each individual generating plant even if a formula for such cost adjustment is evolved. It would not be possible to have a general fuel cost adjustment for all plants since the costs will be different for each plant. Even the FCA formula suggested by the petitioner association will entail working out FCA for each plant. It would not be possible for this Commission to undertake this exercise every year, leave alone every quarter as requested by the petitioner association which is impracticable. The petitioner had suggested that Chhattisgarh Renewable Energy Agency (CREDA) which is the nodal agency for promotion of non-conventional energy sources in the State, and one of the respondents in this case, should undertake this exercise. CREDA has no competence for undertaking such exercise, and has also expressed its inability to do so. In view of the above discussion we are of the considered view that laying down a FCA formula is neither practicable nor necessary. In the absence of this, 5% increase in fuel cost every year has been taken into consideration for computing tariff as the most reasonable option.

(iii) Station Heat Rate

The Hon'ble ATE has directed that the normative gross heat rate (Kcal\Kwh) be taken as 4500. It has been also directed that the station heat rate should be taken based on the actual PG test reports of the projects. The respondent CSEB has submitted that the norms prescribed by the CEA are based on studies conducted on old plants commissioned 8-10 years back. Further technological upgradation of power plants has taken place in the meantime improving the commercial outputs. The Board has, therefore, pleaded that the norms for the individual power plants should only be considered as per the machine design specification or actual whichever is available. We observe that the normative gross heat rate of 4500 recommended by the Committee of CEA has also been arrived at on the basis of design steam parameters of the 15 biomass-based plants surveyed by them. The CEA has added a total of 10% over the design heat rate, 5% to take care of the

operational uncertainties and 5% on account of various losses. We had directed the petitioner association to furnish PG test reports of the 15 biomass-based plants which have already been commissioned and are presently in commercial production. But the petitioner association pleaded that PG test can be conducted only after stabilization of units and also that the result of PG test can be different in subsequent years. It has also been argued that the plants have not been set up through turn-key contract and therefore guaranteed station heat rate is not available and also the assumed ideal and standard pre-conditions for guarantee purposes are generally not available/achievable in practice. Thus they pleaded various constraints why station heat rate cannot be reckoned on the basis of PG test/actual basis. Although not satisfied with their reply, we asked an alternative for information regarding the design/guarantee of boiler efficiency and turbine heat rate in KCal/Kwh. On the plea of the petitioner that generally no plant reaches the desired level of efficiency, the Commission asked for information about the deviation from the guaranteed efficiency which they consider permissible and acceptable. This information has also not been furnished by the association inspite of sufficient notice twice, first on 6.12.2007 and again on 31.12.2007, nor has the petitioner chosen to give a reply. The association has furnished design parameters of only four plants which have been commissioned. In the absence of the design parameters of other working plants which the petitioner association has failed to submit, we have been constrained to work out the station heat rate based on the information furnished by the petitioner in respect of these four plants, following the same method as was followed by the CEA in arriving at gross heat rate of 4500 (Kcal/Kwh) in their report (para 12 of the judgement). As per these calculations (reference annexure) the gross station heat rate comes to 3800Kcal/Kwh. This has been adopted as the normative station heat rate. This has been worked out with 10% addition, 5% for operational uncertainty and 5% for various losses as mentioned earlier. As a result of change in the gross heat rate, from 4500 to 3800 Kcal/Kwh, the specific fuel consumption has been worked out as 1.15 kg/Kwh taking the average calorific value of fuel at 3300 Kcal/kg. The Commission would consider station heat rate on the basis of PG test when the tariff is due for review after five years.

(iv) O&M Cost:

CSEB has also contended that the O&M cost at 7% with 5% annual escalation is very high and should be brought down to reasonable levels. In fact, while recommending O&M expenses of 7%, the CEA itself has said that this is very high and biomass plants should make efforts to reduce the same. The Hon'ble Tribunal has also endorsed this view in para 10 of their judgement. The Commission had decided O&M expenses at 4% of the project cost including insurance and escalation of 5% every year. We had specified a lower rate considering that the CEA has taken into account plants which are quite old and was itself of the opinion that it was very high. With development of technology the O&M expenses should be lower. In view of the directions of the Hon'ble ATE we would not like to make any modification in this rate. This will be subject to review after three years as directed by the Tribunal.

(v) **Depreciation:**

We had decided depreciation @7% p.a. in our order of 11.11.2005. The basis for this rate of depreciation was explained in detail in the order. As per the provisions of the Act, as also the Tariff Policy, the State Commissions are required to be guided by the norms fixed by the Central Regulatory Commission in the matter of determination

of tariff for generating plants. The depreciation rate fixed by the CERC is much less at 3.6%. Although the Tariff Policy [para 5(c)] suggests that for fixing depreciation there should be no need for allowing advance against depreciation, we have allowed advance against depreciation (AAD) as per the norms set by the CERC in their Tariff Regulations, 2004 (clause 21), so that the depreciation amount matches the repayment obligation which is generally spread over 10 years. Depreciation has been provided for the repayment loan considering 10 years as the normative debt repayment period for these generating plants, based on the repayment period for bank finance sanctioned for some plants. Depreciation at the rate of 7% per year is sufficient to repay the loan in full in 10 years. We have allowed depreciation at this rate on all assets including non-depreciable assets such as land so as to enable the project to repay the loan in full in 10 years. Beyond 10 years, the 20% of the remaining asset value has been spread over the remaining life of the plant for depreciation purposes. The Hon'ble Tribunal has directed that depreciation be allowed at 7.84% on the basis of the Ministry of Power notification on the subject of 1994. This notification has been issued under the provisions of the Electricity (Supply) Act, 1948 which has since been repealed by the Act of 2003. In any case, under the present Act it is not within the jurisdiction of Government of India to stipulate rates of depreciation for generating plants. The basis for 7.84% as depreciation also is not clear. Since we have gone by the provisions of the Act and the Tariff Policy, there is no justifiable reason to modify the same. The rate of depreciation, including AAD, for calculation of tariff is therefore retained at 7% annually.

8. We have re-determined the tariff for biomass-based plants on the basis of the norms as directed by the Hon'ble ATE and as per the discussion above. Computation of tariff has been done separately for plants using a maximum of 25% and15% coal as per new norms of MNRE. Tariff for plants using 15% coal will be applicable from 2007-08 and onwards. The working sheets are enclosed as Annexure as part of this order. The tariff for plants using 25% coal for 2005-06 as per these calculations works out to Rs.2.98 per Kwh in place of Rs. 2.67/Kwh worked out earlier and has been computed for 10 years from the base year 2005-06. Tariff for plants using 15% coal has been computed from 2007-08 to 2014-15. These tariffs will be subject to review after five years from the base year on the request of either a biomass-based generator or the Board. The Board shall pay the difference in the cost of power to the plants from whom it has made purchases during the previous years as per these calculations, within sixty days of this order.

The rates of infirm power prior to COD or after COD shall remain as decided by us in para 15 of our order dated 11.11.2005.

9. Some other issues which relate mainly to supply of power to third parties are also required to be addressed. These include wheeling charges and cross subsidy surcharge.

9.1 **Wheeling charges**:

The Hon'ble Tribunal has directed that wheeling charges be levied at 3%. CSEB has argued that the transmission losses in the system alone are much more than 3% and that even PGCIL charges 5 to 7% losses for inter-State transmission which are on much higher voltage. But in view of the specific direction of the ATE we would not like to go into this issue.

9.2 **Cross subsidy Surcharge**

The Commission had ordered that cross subsidy surcharge should be charged by the licensee at 50% of the normal rate. The Hon'ble Tribunal has directed the Commission to examine the feasibility of reducing the cross subsidy further. The petitioner association has pleaded for dispensing with cross subsidy surcharge altogether in the sale of electricity to third party consumers on the ground that the biomass generators will not be able to bear the burden of cross subsidy surcharge in view of the inherent high cost of generation. Their contention is that they would not be able to compete with the distribution licensees in supply of power to a consumer if the cross subsidy surcharge is retained at even 50% level. The CSEB, on the other hand, has vehemently contested this proposal. Its contention is that no such relaxation is contemplated either under the Act or under the Government policies. The CSEB is not in favour of any reduction in the normal cross subsidy surcharge and had raised this issue before the ATE in appeal and also before the Hon'ble Supreme Court. The Act recognises the need for cross subsidy surcharge, to be paid to distribution licensees in case a subsidizing consumer goes out of their fold seeking open access, in order to compensate the loss of cross subsidy. Considering that open access may not be cost effective for biomass-based generators if full cross subsidy is recovered, we had ordered reduction in cross subsidy by half. We had tried to balance the interests of the distribution licensee who have universal supply obligation and those of biomass-based plants who have to be promoted for obvious reasons. Further reduction in cross subsidy would neither be reasonable nor be fair to the licensee. It has to be considered that reduction of cross subsidy surcharge adversely affects other subsidizing consumers by way of increase in the burden of their cross subsidy, or the licensee by way of reducing its return. As per the provision of Section 42(2) of the Act cross subsidy surcharge is levied to meet the current level of cross subsidy. So long as the present tariff structure continues in which generally industrial and commercial consumers cross-subsidize others, mainly the domestic and agricultural consumer whose number in this State is over 90% of the total number of consumer, the surcharge has to continue. The surcharge is the difference between the cost of supply and the tariff of the consumer who goes out of the distribution licensee's fold. This Commission has been making efforts at reduction in the level of cross subsidy in the three tariff orders it has passed for the years 2005-06, 2006-07 and 2007-08. The cost of supply has been progressively brought down from Rs.3.45\Kwh in 2005-06 to Rs.2.98\Kwh in 2007-08. The cross subsidy surcharge has been reduced to a reasonable levels of38 paise /Kwh for HT and 65 paise/Kwh for EHV consumers. Half of this subsidy is not a heavy burden on biomass generators. With wheeling charges at only 3%, which is much less than wheeling charges for all open access customers, and cross subsidy surcharge at 50%, the interests of the biomass-based power producers have been fully protected. It is, therefore, our considered view that reduction of cross subsidy below 50% would not be justified.

9.3 **Banking of Energy**

Banking of energy is a concept which is generally applicable to non-conventional sources of energy such as, wind and small hydel power plants. These are plants with small capacity and their availability is uncertain. These generators generally have a low PLF. In case of biomass-based plants the PLF has been set at 80% and this is to be basis for recovery of fixed costs. CSEB has strongly contended that the banking concept should not be made applicable to biomass-based generators on account of

its commercial impact. The Board had raised this issue in appeal before the Hon'ble Supreme Court also. However, the Hon'ble Tribunal has directed that banking be accepted in the interest of this important non-conventional energy source. The only point on which the matter has been remitted to us is to decide a formula which would compensate the licensee when electricity is banked with the licensee in off-peak hours and withdrawn during peak hours (Para 24 of the judgement). The ATE has suggested that in such a contingency the generator may be asked to pay to the licensee the difference in rates of average annual procurement price from sources outside the State (except Central power) of the licensee and the sale price of the generator. The Commission every year works out, as part of the tariff determination, the average cost of purchase of power from outside the State. Therefore, there should be no difficulty in adopting this approach as suggested by the Hon'ble ATE, to compensate the licensee. We, therefore, order that when the generator withdraws during peak hours power deposited with the licensee in off-peak hours, he should compensate the licensee by paying the difference between the cost of his power and the annual average power purchase cost as worked out by the Commission. We would, however, like to add here that banking is required when a generator wants to supply power to third parties and not when he sells his entire power to the licensee. Secondly, for banking installation of ABT meters is an essential requirement. It is only through such meters that the specific timing of deposit and withdrawal of power would be known. We accordingly order that banking would be permissible (i) only in case of those plants which have not entered into agreements with CSEB for supply of electricity generated in full to the latter; (ii) subject to the condition that the generator installs ABT meters at his end and the point at which the licensee receives the power for banking; (iii) the period of banking will be limited to three months; and (iv) the generator has to pay banking charges @2% of the banked energy per month. Banking charge will be in the form of energy which will be adjusted by the licensee while releasing the banked power. Such charges will meet the expenses incurred by the licensee in maintaining the energy accounts etc.

9.4 Demand Charge for Start-up Power

The ATE has directed that no demand charge on start-up power imported by the biomass-based plants from the grid, be levied for five years of plant operation and levied on a gradual basis upto 50% demand charges applicable to conventional plants. The petitioner has suggested levy of demand charges as under:

First 5 years from COD - Nil

6th year of COD - 10%; and

10% rise every year thereafter till 10th year of COD when it becomes 50%, to be retained at that level thereafter.

The respondent CSEB has contended that levy of demand charges for supply of power by a licensee, even for start-up power, is beyond the scope of the Act and the Government policy regarding the non-conventional energy sources. Demand charges are fixed by the Commission based on the annual revenue requirement and reasonable return approved by the Commission. Once the consumer has contracted certain demand with the licensee, the licensee needs to be bound to secure availability of that much of power irrespective of whether the consumer uses it or not. The investment made in securing the contracted power by the licensee needs to be compensated. The Board has also drawn our attention to para 17 of the judgement

of the Hon'ble Tribunal in which sharing of demand charges collectable from prospective HT consumers (third party sale) proposed by the petitioner has been rejected as unreasonable and untenable on the ground that demand charges are meant to recover the fixed cost of infrastructure provided by the distribution licensee to provide connectivity with consumers. Demand charges by their very nature are leviable irrespective of the actual consumption of energy, to cover the fixed cost of infrastructure. Total exemption from demand charges will cause a financial loss to the licensee which would not be justified. The licensee has to pay fixed cost to Central generating plants and others with which they have entered into contract for purchase of power, irrespective of whether it draws power or not. In fact, we had in our earlier order fixed demand charge by reducing a tariff which was the tariff meant for certain industries by 50%, in the absence of a separate start-up tariff. The Commission has since promulgated a separate start-up tariff for all generators including captive plants w.e.f. 1.10.2006, which has taken into account the facts that the generators need power only once in a while and the quantum generally is not more than 10% of their capacity. There is no justifiable reason why this tariff should not apply to biomass generators also. Therefore, it is our considered view that after the first five years when the biomass plants are exempted from demand charge as a promotional measure, start-up tariff as prevailing at that time shall be applicable from the 6th year of connection of start-up power. Thus during the first five years, from the date of availing start-up power, the biomass generator will be required to pay only energy charges of the start-up tariff at the prevailing rate and not the demand charges, and after five years the full start-up tariff.

9.5 **Netting of energy**:

Netting of energy of those generating plants which are supplying power to the Board would be permitted as directed by the Hon'ble Tribunal.

9.6 **Scheduling of power for purchase by licensees**:

We had in our earlier order specified that if the biomass generator supplies less than 70% or more than 105% of the scheduled energy, tariff for such power will be at variable cost plus 30P\Kwh. In para 25 of their judgement the Hon'ble Tribunal has directed that capping of 105% energy be relaxed and regulated in a manner that 'annual energy PLF does not exceed 100%' Accordingly we order that the stipulation of variable cost plus 30P would be applicable only to the supply of less than 70% of scheduled energy. The supplier may provide and be paid normal tariff for supply of energy above 70% of schedule without a cap of 105%. Monthly billing shall be done on the basis of energy delivered at normal rate upto eleven months. At the end of the year necessary adjustment may be made in the bill for the twelfth month of the year to ensure that energy delivered above 100% PLF is billed at the same rate as for supply below 70% of the scheduled energy.

10. The Hon'ble Tribunal in para 12 of their judgement has observed that agreements entered into between the biomass-based power producers and the licensee, i.e. CSEB, require to be reviewed to ensure compliance with the norms and tariff to be fixed by this order for promotion of non-conventional energy plants and ensure compliance with the provisions of Section 86(1)(e) of the Act. The CSEB has strongly contested this. In their written submission dated 12.3.2007 it has been contended that the provisions of Act and the NEP can be made applicable only to those non-conventional energy sources which have been set up after the Act came into force. It cannot be made applicable to power producers who have already set up

their power plants, on the basis of the then existing policies of the State Government and the Central Government, and then applicable rules and regulations. The members of the petitioner association who have set up their power plants under the State Government policy of 8.4.2002 and have entered into agreement for power supply with the Board prior to the coming into force of the Act (9.12.2003 in the State of Chhattisgarh) cannot be given any concession and relaxation beyond those envisaged under the said State/Central Government policy. These generators are contractually bound to supply power to the licensee and wheel power on the terms and conditions as set out in the agreements entered into with the respondent Board. It has also been contended that these agreements are saved under section 185 of the Act and cannot be reopened now. We consider the stand taken by the Board in respect of PPAs which were entered into before the Act came into force, as logical and legal. We would not like to interfere with these agreements. In the second category are the PPAs which have been entered into before our earlier order of 11.11.2005 was passed. As per the directions of the Hon'ble Tribunal all agreements entered into after our order of 11.11.2005 may be modified as per this order.

11. The last issue is that of the liability of all the distribution licensees in the State to procure power from the biomass-based power plants. There are three distribution licensees in this State i.e. (i) CSEB, whose area of operation extends to the whole State; (ii) JSPL whose area of operation extends to its industrial area and two villages in Raigarh District; and (iii) Bhilai Steel Plant whose jurisdiction extends to only a part of the Bhilai township. The Hon'ble ATE has directed that the power purchase obligations from non-conventional sources should extend to all the licensees. This Commission had ordered that CSEB shall purchase at least 5% of its total consumption of electricity from biomass-based power plants and this obligation would have extended to other two distribution licensees also. However, the Hon'ble Tribunal in their judgement dated 4.4.2007, passed in Appeal No. 14 of 2007 has directed that this 5% can be from any non-conventional energy source and not from biomass-based plants alone. Therefore, the purchase obligation from any non-conventional energy source of 5% power would now extend to CSEB and other licensees. However, considering that presently there are no plants based on non-conventional energy sources in the State other than biomass-based plants it shall be obligatory on all distribution licensees to procure 5% of their present consumption of power from biomass-based power plants only. Other sources of non-conventional energy such as small hydel, wind and solar energy developed will have to be accommodated within this limit as and when these come up in the State against the increase over present demand and consumption..

The Commission in its order passed on 28.2.2007 in the matter of determination of tariff and related dispensation for procurement of power from small hydel power plants, in Petition No.22 of 2006 (T), has made it mandatory for the distribution licensees to procure power from small hydel power projects to the extent of 3% of their total consumption in a year on first come first serve basis, at a tariff as may be determined by the Commission. In view of the Hon'ble ATE's order restricting mandatory purchase of power from all non-conventional energy sources to 5%, the aforesaid order of the Commission needs review so that the total mandatory power purchase from all the non-conventional sources does not exceed 5%. The Commission in its order passed on 11.11.2005, after considering the potential of generation of electricity from biomass sources and the current installed capacities in the State has observed that it would be appropriate to make it mandatory for each

distribution licensee to purchase 5% of its total power consumption during a year, from biomass-based plants located in the State. The Commission had decided to review this quantum after three years of this order or when the installed capacity of the biomass-based plants reaches 100 MW, whichever is earlier. As per information furnished by the CSEB although the installed capacity of biomass plants has reached more than 100 MW they are at present purchasing less than 5% of their electricity requirement from biomass plants. We order that CSEB may purchase upto 5% of their present consumption and beyond that quantity long-term purchase from biomass plants shall be made by competitive bidding only. The mandatory purchase is being capped at 5% of the present consumption so that future growth in demand may accommodate purchase from small hydel and other non-conventional energy sources.

12. The term of PPA for purchase of power from biomass plants by distribution licensees shall be for 20 (twenty) years, as in other States. Tariff is fixed by the Commission for 10 years; it shall be redetermined after this period. Since the life of a plant is 25 years, a PPA for 20 years will ensure long-term purchase of power of non-conventional energy sources by distribution licensees. This will also enable consumers to avail of such power at reasonable rates in latter years.

13 Both CSEB and JSPL have pleaded for monitoring of the use of coal and fossil fuel by the biomass-based generators. Earlier the coal consumption in such plants was permitted upto the level of 25% which as mentioned earlier has been reduced to 15%. In view of this position it would be necessary to monitor the use of fossil fuel by the biomass generators. Monitoring is proposed to be done in following manner:

All generators shall submit a statement of the fuel used during a quarter giving the break up of the use of biomass and fossil fuel separately and the cumulative consumption during the year upto the end of that quarter, to the concerned licensee (CSEB and others) for the quarters of March, June, September and December every year. The source of fossil fuel should also be indicated. A copy of this statement shall also be submitted to CREDA, the nodal agency for promotion of non-conventional energy source in the State. CREDA would be the appropriate agency to monitor the use of fossil fuel by these generators and shall ensure that use of fossil fuel remains within the limit specified by NMRE, Govt. of India. CREDA and the licensee shall submit an annual report to the Commission for each biomass power plant on the use of fossil fuel by the plant during the preceding year, by the end of April every year. In suitable cases and in case any complaint is received in this regard, the Commission may get the fuel mix examined either through its own officers or by an appropriate outside agency. Non-compliance of the stipulation with regard to use of fossil fuel by any generating plant and use of such fuel in excess of the specified percentage during any year, shall render the plant to be treated as any other thermal generator and all benefits given by this order to such plants including tariff, as non-conventional energy source shall stand withdrawn. The licensee should incorporate a provision to that effect in the PPA. CREDA shall obtain, verify and submit to the Commission information for the preceding year with regard to fuel mix in respect of biomass-based generating plants which have already been in commercial production for more than one year, within three months of this order. CREDA has informed (May, 2007) that the State Government is in the process of framing guidelines for fuel mix ratio of these plants. So far orders have, however, not been passed by the State Government. The above procedure is therefore

prescribed. In case the State Government sets up any mechanism for monitoring, this procedure shall stand modified to that extent.

14. The order of this Commission passed on 11.11.2005 in this case shall stand modified to the extent of this order.

Sd/- Sd/-
Member **Chairman**

True Copy

(N.K. Rupwani)
Secretary

Annexure to order dated 15.01.2008 passed in petition No. 7 of 2005.

Computation of Tariff

The following normative figures have been taken for computation of tariff:

1. **Capital Cost:** Rs 4 Cr. per MW.

2. **O&M Expenses:** The O&M expenses including insurance is fixed as 7% of the cost of capital with 5% escalation per annum for three years.

   The CEA while recommending the normative values for biomass generating plants has felt that the O & M expenses of 7% are very high and the biomass plants should make efforts to reduce the same. The CEA has recommended that these expenses would need to be reviewed after 2-3 years.

   Accordingly the Commission has decided that O & M expenses shall be fixed at 7% of the capital cost with 5% escalation per annum for three years and these expenses shall be reviewed after three years from the base year 2005-06.

3. **Auxiliary Power Consumption:** The auxiliary power consumption has been taken as 10%.

4. **Normative Gross Heat Rate (Kcal/kwh):**

   The petitioner has provided turbine heat rate and boiler efficiency in respect of following four plants of its members:

	Installed Capacity (MW)	Boiler Efficiency (%)	Turbine Heat Rate (kcal/kwh)	Unit Heat Rate (kcal/kwh)
Sudha Agro & Chemical Industries Ltd.	9.99	84	2836	3376.19
KVK Energy Pvt. Ltd	15	77.5	2635	3400.00
ISA Power Pvt Ltd	7.5	81	2789	3443.21
Ecofren Power Project Ltd	7.5	81	2789	3443.21

   As per the above information, the weighted average Station Heat Rate (Design Heat Rate) of the four biomass based generating plants is 3410.26 kcal/kwh.

   By giving 5% allowance over the design heat rate to take care of the operational uncertainties, the gross heat rate works out to be 3580.77 kcal/kwh.

   Further assuming the maximum variation on account of various losses to be about 5%, the heat rate comes to 1.05 X 3580.77= 3759.81 kcal/kwh, say 3800 kcal/kwh. This has been adopted.

5. **Plant Load Factor (PLF):** The PLF of 80% has been considered for recovery of full fixed cost.

6. **Depreciation:** The depreciation has been taken at 7% per annum until the debt is repaid. Beyond that 20% is to be spread over the remaining life of the plant, which is 25 years.

7. **Specific fuel consumption:** By taking the normative gross heat rate of 3800 kcal/kwh and average calorific value of fuel as 3300 kcal/kg, the specific fuel consumption works out as 1.15 Kg/kwh.

8. **Fuel Cost:**

   a) **For biomass plants using 75% biomass and 25% coal as a fuel**: The cost of biomass has been considered as Rs 850 per MT and the landed cost of coal has been considered as Rs 1200 per MT. By considering 75% of fuel as biomass and the balance 25% fuel as coal, the weighted average cost of fuel comes out to be Rs 937 per MT. For the purpose of determination of tariff the weighted average fuel cost has been considered as Rs 937 per MT for the base year 2005-06

   b) **For biomass plants using 85% biomass and 15% coal as a fuel**: The cost of biomass has been considered as Rs 937 per MT and the landed cost of coal has been considered as Rs 1323 per MT. By considering 85% of fuel as biomass and the balance 15% fuel as coal, the weighted average cost of fuel comes out to be Rs 995 per MT. For the purpose of determination of tariff the weighted average fuel cost has been considered as Rs 995 per MT for base year 2007-08.

Other parameters which had been decided by the Commission in order dated 11.11.2005 and which have not been modified by the Hon'ble Appellate Tribunal have been retained. These are:

1. **Interest on Working Capital:** The interest on working capital has been considered at 12.75%. The working capital for biomass generators shall cover fuel stock of 3 months, O & M expenses of 1 month and receivable to one and half months of fixed and variable charges for sale of electricity.

2. **Interest on term loan:** The interest on term loan has been fixed as 11.75% for the purpose of tariff determination.

3. **Debt-Equity Ratio:** The debt–equity ratio as on the date of commercial operation shall be 70:30 for determination of tariff.

4. **Return on Equity:** The ROE of 16% p.a on equity capital has been considered for the purpose of determination of tariff. In the order dated 11.11.2005 it has been clarified that the normal rate of return on equity is 14% and to meet the MAT at the rate of 7.5% of above ROE i.e. 1% has been increased and this comes out to be 15% . In order to promote the development of biomass generation a ROE of 16% p.a on equity has been considered for determining the tariff.

   Based on the above, the fixed charge and energy charge for biomass-based generating plant have been computed as given below:

A-1. Fixed Cost :-(Common for plants with fuel mix of 75:25 and 85:15)

Calculation Sheet for Fixed Cost of Bio mass generators for a period of 10 years											
Particulars	Unit	1	2	3	4	5	6	7	8	9	10
Project Capacity	MW	7.5									
Cost per MW	Rs.crores/MW	**4**									
Project Cost	Rs. crores	30									
Depreciation Rate	%	**7**									
O & M expenses	%	**7**									
O & M escalation p.a for three years	%	**5**									
Working Capital Schedule											
Fuel Cost	month	3	3	3	3	3	3	3	3	3	3
O & M expenditure	month	1	1	1	1	1	1	1	1	1	1
Receivable	month	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Debt	%	70									
Equity	%	30									
Debt Amount	Rs.crores	21									
Debt Repayment(years)	years	10									
Equity amount	Rs.crores	9									
Rate of Interest on WC	%	12.75									
Rate of Interest on LC	%	11.75									
Return on Equity	%	16	16	16	16	16	16	16	16	16	16
Interest on Working Capital											
Cost of fuel	Rs.crores	1.42	1.49	1.56	1.64	1.72	1.81	1.90	2.00	2.10	2.20
O & M	Rs.crores	0.18	0.18	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Receivables	Rs.crores	1.76	1.78	1.80	1.81	1.82	1.84	1.85	1.87	1.89	1.92
Gross Working Capital Requirement	Rs.crores	3.36	3.45	3.56	3.65	3.74	3.84	3.95	4.06	4.18	4.31
MPBF @ 75 %	Rs.crores	2.52	2.59	2.67	2.74	2.81	2.88	2.96	3.05	3.14	3.23
Interest on WC	Rs.crores	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.40	0.41
O & M Exp. At 5% escalation p.a. for three years	Rs.crores	2.1	2.21	2.32	2.32	2.32	2.32	2.32	2.32	2.32	2.32
Depreciation	Rs.crores	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Interest on Loan Capital	Rs.crores	2.47	2.22	1.97	1.73	1.48	1.23	0.99	0.74	0.49	0.25
Return on Equity	Rs.crores	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44	1.44
Total Fixed Cost	Rs.crores	8.43	8.30	8.17	7.93	7.69	7.46	7.22	6.98	6.75	6.51
Net Generation in year	MU	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30
Fixed Cost per unit	Rs/kwh	1.78	1.75	1.73	1.68	1.63	1.58	1.53	1.48	1.43	1.38

A-2. Energy Charges for fuel mix ratio of 75:25 (75% biomass and 25% coal)

Energy Charges for Biomass based generators												
S No		Unit	FY 06	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15
1	Capacity	MW	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
2	PLF	%	80	80	80	80	80	80	80	80	80	80
3	Annual Generation (Gross)	MU	52.56	52.56	52.56	52.56	52.56	52.56	52.56	52.56	52.56	52.56
4	Aux. Consumption	%	10	10	10	10	10	10	10	10	10	10
5	Aux. Consumption	MU	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26
6	Net Generation	MU	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30
7	Gross Station Heat Rate	Kcal/kwh	3800	3800	3800	3800	3800	3800	3800	3800	3800	3800
8	Average GCV of fuel (coal and rice husk)	Kcal/kg	3300	3300	3300	3300	3300	3300	3300	3300	3300	3300
9	Specific fuel consumption	kg/kwh	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
10	Actual Fuel Consumption	MT	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64
11	Weighted Av Cost of fuel per MT at 5% escalation p.a.	Rs/MT	937	983.85	1033.04	1084.69	1138.93	1195.88	1255.67	1318.45	1384.38	1453.59
12	Total Cost of fuel	Rs Crores	5.67	5.95	6.25	6.56	6.89	7.24	7.60	7.98	8.38	8.80
13	Energy charges	Rs/unit	1.20	1.26	1.32	1.39	1.46	1.53	1.61	1.69	1.77	1.86

A-3. Energy Charges for fuel mix ratio of 85:15(85 % biomass and 15% coal)

Energy Charges for Biomass based generators										
S No		Unit	FY 08	FY 09	FY 10	FY 11	FY 12	FY 13	FY 14	FY 15
1	Capacity	MW	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
2	PLF	%	80	80	80	80	80	80	80	80
3	Annual Generation (Gross)	MU	52.56	52.56	52.56	52.56	52.56	52.56	52.56	52.56
4	Aux. Consumption	%	10	10	10	10	10	10	10	10
5	Aux. Consumption	MU	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26
6	Net Generation	MU	47.30	47.30	47.30	47.30	47.30	47.30	47.30	47.30
7	Gross Station Heat Rate	Kcal/kwh	3800	3800	3800	3800	3800	3800	3800	3800
8	Average GCV of fuel(coal and rice husk)	Kcal/kg	3300	3300	3300	3300	3300	3300	3300	3300
9	Specific fuel consumption	kg/kwh	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15
10	Actual Fuel Consumption	MT	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64	60523.64
11	Weighted Av Cost of fuel per MT at 5% escalation p.a.	Rs/MT	995.0063	1044.757	1096.994	1151.844	1209.436	1269.908	1333.404	1400.074
12	Total Cost of fuel	Rs Crores	6.02	6.32	6.64	6.97	7.32	7.69	8.07	8.47
13	Energy charges	Rs/unit	1.27	1.34	1.40	1.47	1.55	1.62	1.71	1.79

B-1. Tariff of biomass generators for fuel mix ratio of 75:25 (75 % biomass and 25% coal)

Fixed Charges

Year of Commercial Operation (nth year)	Fixed Charge Rs/unit
1	1.78
2	1.75
3	1.73
4	1.68
5	1.63
6	1.58
7	1.53
8	1.48
9	1.43
10	1.38

Energy (Variable) Charges

Financial Year	Energy (Variable) Charges Rs/unit
2005-06	1.20
2006-07	1.26
2007-08	1.32
2008-09	1.39
2009-10	1.46
2010-11	1.53
2011-12	1.61
2012-13	1.69
2013-14	1.77
2014-15	1.86

C2. Tariff of biomass generators for fuel mix ratio of 85:15(85 % biomass and 15% coal)

Fixed Charges

Year of Commercial Operation (nth year)	Fixed Charge Rs/unit
1	1.78
2	1.75
3	1.73
4	1.68
5	1.63
6	1.58
7	1.53
8	1.48

Energy (Variable) Charges

Financial Year	Energy (Variable) Charges Rs/unit
2007-08	1.27
2008-09	1.34
2009-10	1.40
2010-11	1.47
2011-12	1.55
2012-13	1.62
2013-14	1.71
2014-15	1.79

Note:

1. The petitioner has pleaded that while the Hon'ble Commission has considered 75% of the working capital as maximum permissible Bank finance and provided interest on such portion of the working capital, the provision of 16% as return on equity on 25% margin of the working capital has been omitted.

The Working Capital Margin (25%) is capitalized and financed by equity on the whole of which 16% return (ROE) has been provided. thus there is a return of 16% on working capital margin.

2. Further, the petitioner has submitted that the Commission has overlooked the 2 years' moratorium for commencement of repayment term loans. For the purpose of computation of interest on term loans, no repayment ought to be considered during the first year of operation and consequently the interest on term loans would remain the same for the 1st and 2nd years.

In case the interest on term loan is kept the same for the 1st and 2nd years taking into account the moratorium period for repayment of loan, the depreciation and Advance Against Depreciation (AAD) cannot be allowed for that period. Instead of following such a procedure, the total repayment period has been taken into account and the interest and depreciation has been provided accordingly.

3. All the parameters decided above shall be applied for the base year 2005-06 and shall be reviewed after 5 years from the base years except for O&M expenses which shall be reviewed after 3 years from the base year.

Sd/-
Member

Sd/-
Chairman