

**CENTRAL ELECTRICITY REGULATORY COMMISSION
NEW DELHI**

Petition No. 35/2012 (Suo-Motu)

**Coram: 1. Dr. Pramod Deo, Chairperson
2. Shri V. S. Verma, Member
3. Shri M. Deena Dayalan, Member**

Date of hearing: 15.03.2012

Date of Order: 27th March, 2012

IN THE MATTER OF

Determination of generic levellised generation tariff under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012.

ORDER

1. The Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012, (hereinafter referred to as “the RE Tariff Regulations”) provide for terms and conditions and the procedure for determination of tariff of the following categories of Renewable Energy (RE) generating stations:
 - (a) Wind Power Project;
 - (b) Small Hydro Projects;
 - (c) Biomass Power Projects with Rankine Cycle technology;
 - (d) Non-fossil fuel-based co-generation Plants;
 - (e) Solar Photo voltaic (PV);
 - (f) Solar Thermal Power Projects;
 - (g) Biomass Gasifier based Power Projects; and
 - (h) Biogas based Power Project.

2. The Regulations enjoin upon the Commission to determine the generic tariff on the basis of the *suo-motu* petition, for the RE technologies for which norms have been provided in the RE Tariff Regulations. Generic Tariff is different from the project specific tariff for which a project developer has to file petition before the Commission as per the format provided in the RE Tariff Regulations. Pertinently, project specific tariff has been envisaged for the new RE technologies and the technologies which are still at the nascent stage of development, and the Commission shall determine the project specific tariff for such technologies on a case to case basis.
3. Clause (1) of Regulation 8 of the RE Tariff Regulations provides that “the Commission shall determine the generic tariff on the basis of *suo-motu* petition at least six months in advance at the beginning of each year of the Control period for renewable energy technologies for which norms have been specified under the Regulations”. The Commission has notified the RE Tariff Regulations on 06.02.2012. The Commission, in due discharge of the mandate under Regulation 8(1) of RE Tariff Regulations has determined the generic tariff of the RE projects for the first year of control period (i.e. FY 2012-13) through this Order.
4. The Commission issued Order proposing “Determination of generic levellised generation tariff under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012” (Petition No. 35/2012 (*suo-motu*) dated 28th February, 2012 for inviting comments/ suggestion/ objections from the stakeholders.
5. The Commission vide its public notice no. (Petition No. 35/2012 (*suo-motu*) dated 29th February, 2012 invited comments from the various stakeholders. In response to the same written comments/suggestions received from following stakeholders:

Sl. No.	Name of the Stakeholder
1.	Sathyam Green Power Pvt. Ltd.
2.	Bharat Green Energy Pvt. Ltd
3.	Transtech Green Power Pvt. Ltd.
4.	Harsil Hydro Ltd.
5.	Dalkia Energy Services Ltd.
6.	Ashden India Collective
7.	Transcarb Energy Pvt. Ltd.
8.	Kalpataru Power transmission Limited
9.	Indian Biomass Power Association
10.	Orient Green Power Company Ltd.
11.	Sanjog Sugars & Eco Power (P) Ltd.
12.	Global Powertech Equipments Ltd.
13.	Shriram Powergen Ltd.
14.	Shriram Non-Conventional Energy Ltd.
15.	Amrit Environmental Technologies (P) Ltd.
16.	PSR Green Power Projects Pvt. Ltd.
17.	Biomass Power Producers Association, Tamilnadu
18.	Synergy Shakti Renewable Energy Ltd.
19.	ETA Powergen Pvt. Ltd.
20.	Merit Biozen Ltd.
21.	Auro Mira Bio Power India Pvt. Ltd.
22.	A2Z Group
23.	Jalandharygad Hydro Pvt. Ltd.
24.	Siyangad Hydro Pvt. Ltd.
25.	Kakoragad Hydro Pvt. Ltd
26.	Indian Wind Power Association
27.	GE Energy
28.	Maharashtra Biomass Energy Developers Association
29.	Cogeneration Association of India
30.	Energy Infratech Pvt. Ltd.
31.	Ministry of New and Renewable Energy (MNRE)

6. Subsequently, a public hearing was held on 15th March, 2012 and following stakeholders expressed their views/suggestions/comments in person:

1. Sathyam Green Power Pvt. Ltd.
2. Bharat Green Energy Pvt. Ltd
3. Transtech Green Power Pvt. Ltd.
4. Synergy Shakti Renewable Energy Ltd.
5. Dalkia Energy Services Ltd.
6. Kalpataru Power transmission Limited
7. Jalandharygad Hydro Pvt. Ltd.

8. Siyangad Hydro Pvt. Ltd.
9. Kakoragad Hydro Pvt. Ltd
10. Indian Wind Power Association

7. The Commission has analysed the views/comments/suggestions of the stakeholders and the Commission's decisions are as below;

A. General Principles

I. Control Period

Comments:

The control period should be made 2 years instead of 3 years for determining Biomass fuel prices. **(Transtech Green Power Pvt. Ltd., Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco Power (P) Ltd., Global Powertech Equipments Ltd., Shriram Powergen Ltd., Shriram Non-Conventional Energy Ltd. Amrit Environmental Technologies (P) Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu , ETA Powergen Pvt. Ltd.)**

Biomass fuel prices to be determined annually and same be pass through in the tariff as suggested earlier by the Ministry. **(MNRE)**

A control period of 2-3 years should be considered due to cost escalation and volatility as inflation in India is about 8% on an average. **(IWPA)**

A control period of two (2) financial years is most desirable which should be applied in this Regulation. **(Maharashtra Biomass Energy Developers Association)**

Analysis and Decision

The RE Tariff Regulations specify the Control Period. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2012-13.

B. Financial Principles

I. Return on Equity

Comments:

Normative return on equity should be revised to 24% reflect the higher monetary rates prevailing in the market and it should increase proportionally with increases in interest rates as is reflected in the internationally accepted CAPM method. **(Harsil Hydro Ltd.)**

Return on Equity may be considered at 24% considering the various risks involved in setting up and operating SHP schemes in remote Himalayan sites. Also, during construction period there is nil return on equity invested which should be compensated in subsequent period after commissioning. **(Synergy Shakti Renewable Energy Ltd., Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

Analysis and Decision

The RE Tariff Regulations specify the Return on Equity. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2012-13.

II. Rate of Interest on term loan

Comments:

Rate of interest on term loan for biogas based power project may please be considered @ 14% for determination of tariff. **(Bharat Green Energy Pvt. Ltd.)**

Applicable Interest rates currently in force are in the range of 14-14.5% p.a. **(Energy Infratech Pvt. Limited)**

The interest rates for the term loan are in the range of 15.5% to 17%. **(Transtech Green Power, ETA Powergen Pvt. Ltd. , ETA Powergen Pvt. Ltd.)**

SBI BPLR should be used as the normative interest rate. Otherwise, we urge CERC to kindly justify the lower interest rates by providing information on 2011-12 interest rates being offered by IREDA for SHPs and the percentage of SHPs that qualify and receive funding from IREDA. **(Harsil Hydro Ltd.)**

Suggested to specify the normative interest rate at the prevailing rate of 15.5 - 17%. **(Indian Biomass Power Association, Orient Green Power Company Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu)**

Interest rate for project term loans should be determined at SBI Base rate plus a spread of 300 basis points and for working capital loans at SBI base rate plus a spread of 400 basis points. **(Synergy Shakti Renewable Energy Ltd., Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

Interest rates are higher for project loans and also for working capital than 12.3% and 12.8 % presently considered by CERC. Applicable lending rates to SHP projects may please be taken from IREDA, SBI etc to reflect present scenario. **(Jalandharygad Hydro Pvt. Ltd., Siyangad Hydro Pvt. Ltd., Kakoragad Hydro Pvt. Ltd)**

Interest rate must be specified at State Bank rate plus 600 basis points as even the best companies with excellent credit rating are unable to get at 300 basis points. Two years moratorium period in loan repayment should be considered. **(Indian Wind Power Association)**

Analysis and Decision

The RE Tariff Regulations specify the normative Rate of Interest on Term Loan. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2012-13.

III. Rate of Interest on Working Capital

Comments:

Rate of interest on working capital for biogas based power project may please be considered @ 14.5% for determination of tariff. **(Bharat Green Energy Pvt. Ltd., Transcarb Energy Pvt. Ltd.)**

The current interest rate for working capital is between 15% to 17%. **(Transtech Green Power Pvt. Ltd.)**

Interest on Working Capital should be SBI Rate plus 600n basis points or 14.5%. Some of the states utilities are not making payment in time, it is suggested that 6 months revenue should be considered for working capital instead of 2 months. Maintenance @30 % of O&M to be taken. **(Indian Wind Power Association)**

Analysis and Decision

The RE Tariff Regulations specify the normative Rate of Interest on Working Capital. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2012-13.

In case of Biomass based generation, Interest on working capital has been taken 10.30% instead of 12.80%. **(A2Z Maintenance & Engineering Services Limited)**

Analysis and Decision

Comments have been noted and incorporated.

IV. Depreciation

Comments:

In case of Non fossil fuel based generation, Depreciation after 12years has been considered at 3.95% instead of 2.5%. **(A2Z Maintenance & Engineering Services Limited)**

Analysis and Decision

Comments have been noted and incorporated.

V. CDM Benefits

Comments:

The carbon credits generated are an incentive for the developers to install renewable energy projects; hence should be retained by the generating companies and not shared with the beneficiaries. **(Harsil Hydro Ltd., Jalandharygad Hydro Pvt. Ltd., Siyangad Hydro Pvt. Ltd., Kakoragad Hydro Pvt. Ltd)**

Analysis and Decision

The RE Tariff Regulations specify the mechanism of sharing of CDM benefit. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff for FY 2012-13.

C. Wind Energy Projects

I. Capital cost

Comments:

Commission should review the Capital cost assumptions for establishing tariffs as the current higher efficiency MW class technology has an average CAPEX, significantly higher than KW class machines. **(GE Energy)**

In case IDC and O&M charges is required to be borne by WEG the same should be recovered through tariff mechanism and the capital cost should cover cost incurred

upto interconnection and same should be specified at ₹ 633 Lakh/MW. **(Indian Wind Power Association)**

II. CERC Wind Energy tariff

Comments:

GE Energy suggested that CERC tariff norms should be implemented in all states.

CERC should determine project specific tariff for repowering and offshore projects as repowering needs higher incentives as the developers has to account for dismantling of the older turbines. For off-shore wind turbines over project cost is significantly higher because of turbine size and technology. **(GE Energy)**

III. Revised WPD-CUF

Comments:

GE Energy supports the revised Wind Power Density (WPD characterizations we believe that this would spur additional development in the wind energy sector. **(GE Energy)**

CUF should be revised as good wind zone sites has been utilized and the left over is only low wind zone. The CUF in Tamil Nadu is less than 19% for the past years where WPD is 300-400 W/M². **(Indian Wind Power Association)**

Analysis and Decision

The RE Tariff Regulation specify the normative parameters for wind energy projects for determination of tariff for FY 2012-13. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

IV. Other Suggestions from Indian Wind Power Association (IWPA)

- Must run status should be given to wind energy projects.
- Forecasting of wind energy generation within range of +/- 30% as per IEGC-2010 is not possible.

- Persistence forecasting method should be adopted as it is a simple method where errors are in the range of 20%.

Analysis and Decision

The review of the above-mentioned as suggested by IWPA are not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

D. Small Hydro Projects

I. Capital Cost

Comments:

The capital cost of small hydro projects between 5 – 25 MW, located in the hilly regions of HP, Uttarakhand and the North East, is currently between ₹ 8 crore per MW and ₹ 10 crore per MW. Requiring new projects to be funded at ₹ 7.00 crore per MW is unfair, unrealistic, and completely ignores the financial reality of implementation. In the absence of further project cost information, it is urged that CERC kindly revise the Capital Cost norms upwards to ₹ 8.17 crore or otherwise kindly undertake further investigation as to the reality on the ground in terms of actual implementation costs.

Transmission line costs should be added separately to the project cost depending on the distance and the voltage of the line to be constructed. **(Harsil Hydro Ltd., Synergy Shakti Renewable Energy Ltd., Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

The capital cost for SHP in Uttarakhand/Himachal and NE States of Rs 700 lacs/Mw for 5-25MW, and 770 lacs/Mw for upto 5MW is extremely low and not reflective of present capital costs which are close to Rs 9 crores to 10 crores/MW. Determination of capital costs may please be done in consultation with reputed bodies like IREDA, AHEC-IIT Roorkee, WRTDC- Roorkee, UJVNL Ltd- Uttarakhand, prominent consultants like Indo Canadian Consultancy Ltd -NOIDA, Hutarew - Delhi, SMEC- Gurgaon or other similar, and

also recently taken up SHP projects costs may be obtained. Capital cost determinations may please be based on actual supported data and justified in more depth before final fixation of tariff. The proposed tariff for SHPs needs to be duly revised to reflect the increase in project capital cost from that proposed presently. . **(Jalandharygad Hydro Pvt. Ltd., Siyangad Hydro Pvt. Ltd., Kakoragad Hydro Pvt. Ltd)**

Further submitted that the MNRE Capital subsidy is a developer incentive and should not be used for reducing tariff. Capital subsidy should go to the project developer as no equity return is being paid for project construction period of 3 years (i.e. date of financial closure date to commencement of generation date. **(Harsil Hydro Ltd.)**

Capital subsidy benefits should be allowed to be retained by the developer to mitigate his project risks. **(Jalandharygad Hydro Pvt. Ltd., Siyangad Hydro Pvt. Ltd., Kakoragad Hydro Pvt. Ltd)**

The Capital Cost and O&M expenses are higher in Himachal Pradesh, Uttarakhand and North-Eastern States as compared to the other States. However, the net tariff of these States is lower as compared to Other States. **(Energy Infratech Pvt. Limited)**

Analysis and Decision

The RE Tariff Regulation specify the base capital cost for FY 2012-13. The review of the base project cost of Small Hydro Power plant and consideration of the cost of evacuation beyond the inter-connection point, are not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

II. O & M Expenses

Comments:

The O&M costs are very low and need to be atleast 2.5% of Capital Cost and additionally insurance cost of 1% allowed to cover natural disasters. As these SHP projects are proposed in Himalayan region which is under high seismic/earthquake zone and prone to natural calamities, due safeguard in form of insurance coverage is required to protect

investment and bank exposure. 1% insurance for areas within seismic zone V may be considered, with 0.2% reduction for each stage reduction in seismic zone area (for eg in seismic zone IV insurance may be allowed at 0.8%).**(Jalandharygad Hydro Pvt. Ltd., Siyangad Hydro Pvt. Ltd., Kakoragad Hydro Pvt. Ltd)**

Analysis and Decision

The RE Tariff Regulation specify the normative O & M expenses for FY 2012-13. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

E. Biomass based power plant (Rankine Cycle Technology)

I. Biomass Price

Comments:

Biomass price specified for Haryana (₹ 2635/tonne) & Punjab (₹ 2756/tonne) are higher than the Rajasthan (₹ 2300/tonne). This has resulted in transportation of Biomass out of Rajasthan and consequently the prices of Biomass in Rajasthan have also reached that level. It is therefore requested that the price of Biomass for Rajasthan may be taken the same as Punjab. **(Sathyam Green Power Pvt. Ltd.)**

There is volatility in fuel price and if correct fuel prices are not given, the developer would struggle and plant would stop as happening in the country. There should be clear policy and guidelines of fixing the variable cost on fuel cost on annual independent survey either conducted by CERC or MNRE. **(Transtech Green Power Pvt. Ltd.)**

Requested to reconsider biomass fuel price considered for Rajasthan at ₹ 2756/tonne (same as specified for the State of Punjab) as against notified at ₹2300 Lakh/MW as the plants are located in bordering areas of other states like Punjab, Haryana and Madhya Pradesh. The farmers and traders in Rajasthan would naturally like to sell the biomass where they get higher prices. **(Kalpataru Power transmission Limited)**

E-auction price of coal less 10% to be specified as biomass price as it is expected to be cheaper than coal by about 10%. The e-auction prices are based on market forces of demand and supply and decided by Coal India Ltd. in a most transparent manner.

(Sathyam Green Power Pvt. Ltd.)

The biomass fuel adjustment mechanism (FAM) should consider the base price preparation and also the transport cost on "as fired basis" rather than "as received basis". **(Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco Power (P) Ltd., Global Powertech Equipments Ltd., Shriram Powergen Ltd., Shriram Non-Conventional Energy Ltd., Amrit Environmental Technologies (P) Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu, , ETA Powergen Pvt. Ltd.)**

The Commission may fix the biomass fuel price considering the actual market position and fix at ₹ 3800/tonne with an annual escalation of 10% p.a. **(Maharashtra Biomass Energy Developers Association)**

II. Escalation in Price of Biomass

Comments:

The escalation in the prices of coal which has gone up by more than 30%, whereas the formula considers only 5%. Commissions should allow fuel price adjustment on quarterly basis.

Independent consultant appointed by RERC concluded that there would be about 17% and 15% annual increase in the prices of biomass at the farmers end in F.Y. 2011-12 and 2012-13. **(Sathyam Green)**

III. Station Heat Rate

Comments:

SHR of 4000 is not realistic and practical and should be taken as 4400. **(Sathyam Green Power Pvt. Ltd.)**

SHR for biomass power plants may be considered @ 4500kCal/kWh based on CEA Report published in 2005. **(Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco Power (P) Ltd., Global Powertech Equipments Ltd., Shriram Powergen Ltd., Shriram Non-Conventional Energy Ltd., Amrit Environmental Technologies (P) Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu, Synergy Shakti Renewable Energy Ltd., Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd., ETA Powergen Pvt. Ltd., Maharashtra Biomass Energy Developers Association, MNRE)**

IV. Gross Calorific Value

Comments:

Normative GCV may be taken as 3100 Kcal/Kg. **(Sathyam Green Power Pvt. Ltd.)**

The GCV of fuel deteriorate on storage, the fuel has dust, sand and moisture. GCV as feed basis is only between 2600 to 2800 kCal/kg. The GCV of Juliflora based plant is around 2800 kCal/kg, which has been also captured in the independent survey of state government. **(Transtech Green Power Pvt. Ltd. , ETA Powergen Pvt. Ltd.)**

It is requested that this peculiar difficulty in case of biomass storage may be considered and minimum 2% losses in storage may be allowed. It may be mentioned that RREC has allowed 2% losses on this account. **(Sathyam Green Power Pvt. Ltd.)**

The biomass plants are to be operated with the minimum moisture content of 25-30%, which affects the GCV to a level of 2600 to 2800 kCal/Kg on as fed basis. **(Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco**

Power (P) Ltd., Global Powertech Equipments Ltd., Shriram Powergen Ltd., Shriram Non-Conventional Energy Ltd., Amrit Environmental Technologies (P) Ltd.)

As per our experience, the average GCV (after taking into account losses due to moisture) is 200 kCal/kg on “fired basis”. **(Synergy Shakti Renewable Energy Ltd. , Merit Biozen Ltd. ETA Powergen Pvt. Ltd.)**

Biomass plants will not run on single fuel and a mix of woody and non woody biomass shall be used to fire the plant. Hence the GCV of the fuel would be depending on the percentage mix of fuel to be used for generation of power. **(Maharashtra Biomass Energy Developers Association)**

While determining the GCV, factors such as GCV deterioration on storage for long term as the biomass degrades with time, to be considered. **(MNRE)**

V. O & M Expenses

Normative O&M cost should be considered at reasonable level of ₹ 48 lakh/MW. **(Sathyam Green Power Pvt. Ltd., Synergy Shakti Renewable Energy Ltd. , Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

Currently O & M level are ranging from ₹ 40 to ₹ 45 Lakh/MW. **(Transtech Green Power Pvt. Ltd. , ETA Powergen Pvt. Ltd.)**

Requested to reconsider normative O&M charges at ₹ 45Lakh/MW as against notified at ₹ 24 Lakh/MW in the RE Tariff Regulation-2012, considering O&M expenses allowed for Badarpur and Talchar TPS at ₹ 34.12 Lakh/MW and ₹ 38.70 Lakh/MW respectively and higher inflation in past two years. **(Kalpataru Power transmission Limited)**

It is requested that Fuel stacking and feeding cost cost may be allowed in addition to the O&M cost as it is peculiar for biomass power plants unlike other RE plants. **(Sathyam Green Power Pvt. Ltd.)**

O & M expenses of Biomass on current levels are ranging from ₹ 40 to ₹ 45 Lakh/MW. **(Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco Power (P) Ltd. , Global Powertech Equipments Ltd., Shriram Powergen Ltd., Shriram Non-Conventional Energy Ltd. Amrit Environmental Technologies (P) Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu)**

The O&M expenses specified in the Regulation are at about 5.4% on the Capital Cost. The Capital cost of the plant may kindly be considered as ₹ 600 Lakh/MW (water cooled condensers) and ₹ 34.56 lakh/MW (Air Cooled condensers) determining O&M expenses at ₹ 32.4 Lakh/MW and ₹ 34.56 Lakh/MW respectively with an annual escalation rate of at least 7%. **(Maharashtra Biomass Energy Developers Association)**

O &M expenses are on the lower side as it is in the range of ₹ 30 to 35 Lakh/MW. **(MNRE)**

VI. Capital Cost

Comments:

The minimum capital cost for air cooled condenser technology is ₹ 650 lakhs/MW. The additional capital cost due to air cooled condenser is ₹ 50 lakhs/MW. Thus, the capital cost for water cooled technology should be minimum ₹ 600 lakhs/MW. It is also seen that the capital cost for wind has been increased by 11.65%. If the same percentage of increase is applied to biomass power plant, the capital cost should be ₹ 502.43 lakhs/MW for water cooled technology. **(Sathyam Green Power Pvt. Ltd.)**

Keeping ₹ 445 Lakh/MW as capital cost for biomass power plants in Rajasthan is irrelevant and unfeasible and unrealistic. The SERC in the past has already evaluated

these points and had fixed a capital cost of ₹ 586 Lakh/MW. **(Transtech Green Power Pvt. Ltd.)**

The new biomass power projects cost is ₹ 570-580 Lakhs/MW. **(Indian Biomass Power Association, Orient Green Power Company Ltd., Sanjog Sugars & Eco Power (P) Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu, ETA Powergen Pvt. Ltd.)**

Review of the assumptions, particularly in respect of GCV, Fuel cost, SHR, PLF and capital cost and acceptance of the recommendations from by MNRE in respect of these items. **(Dalkia Energy Services Ltd.)**

It is submitted that, appointment of an expert committee comprising of members from CERC Technical wing, CEA, MNRE, IISC Bangalore or IIT Mumbai, Biomass power associations, Biomass power consultants, reputed technology supplier to go into details and review and make recommendations. **(Dalkia Energy Services Ltd.)**

Capital cost for new biomass power plant should be determined at ₹ 550 Lakh/MW for FY 2012-13. **(Synergy Shakti Renewable Energy Ltd. , Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

The Capital cost for the biomass projects should be considered at ₹ 600 Lakh based on Water cooled condenser and ₹ 640 Lakh/MW for those projects based on Air Cooled condenser. **(Maharashtra Biomass Energy Developers Association)**

The capital cost of recently commissioned biomass power plants are in the range of ₹ 550 Lakh/MW mainly due to deployment of high pressure boilers (60 kg/cm² & above), biomass collection / compaction / shredding equipment, air cooled condensers & RO plants to overcome water shortages & quality , etc. **(Cogeneration Association of India)**

Capital cost norm need revision based on recently commissioned biomass power projects which are in the range of ₹ 550 to ₹ 600 Lakh/MW. **(MNRE)**

VII. Aux. Consumption

Comments:

The auxiliary consumption in air-cooled technology is not less than 12%. In Juliflora based plant, there is huge electricity requirement for running wood Chippers and wood Shredder and the auxiliary consumption is 13%. **(Transtech Green Power Pvt. Ltd.)**

It is requested to consider an increase in aux. consumption by an incremental 2% to 12% for all biomass based power plants installed with dry cooling systems. **(Indian Biomass Power Association, Orient Green Power Company Ltd., Global Powertech Equipments Ltd., Shriram Powergen Ltd. Shriram Non-Conventional Energy Ltd., PSR Green Power Projects Pvt. Ltd., Biomass Power Producers Association, Tamilnadu, ETA Powergen Pvt. Ltd.)**

Requested that this norm may be fixed at minimum 12%. **(Synergy Shakti Renewable Energy Ltd. , Merit Biozen Ltd., Auro Mira Bio Power India Pvt. Ltd.)**

Since the biomass plants after stabilization period perpetually run at maximum about 70-80%, the Auxiliary consumption should be assumed as 11.5%. **(Maharashtra Biomass Energy Developers Association)**

Analysis and Decision

The review of various normative parameters specified for Biomass based power plants are not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

VII. Minimum Performance Value

Comments:

Renewable energy policy guidelines could lay down Minimum Performance Value (MPV) based on Capacity Utilization factor (CUF) based on certain conditions (e.g. overall efficiency not less than 30%, plant operation not less than 70% of time based on a biomass LHV of 3300 kCal/kg, moisture content less than 15% and ash less than 10%.

Analysis and Decision

The generic tariff determined through this order is based on the normative parameters specified in the Regulations. There is an inherent disincentive for generation below the normative CUF in terms of lower recovery of cost.

F. Bagasse based cogeneration projects

I. Capital Cost

The capital cost of recently commissioned non fossil fuel based cogeneration power plants are in the range of ₹ 650 Lakh/MW mainly due to deployment of high pressure boilers (87 kg/cm² & above), air cooled condensers & RO plants to overcome water shortages & quality , tractors, conveyors, shredders for increasing off season operating days etc. **(Cogeneration Association of India)**

G. Biomass Gasifier

I. Capital Cost

Comments;

Capital cost for gasification plants should be in the range of 7-8 Cr. /MWe. **(GE Energy)**

II. O & M Cost

Comments;

O &M cost for bioenergy plants should be in the range of 0.5-1.0 `/kWh depending upon the technology. **(GE Energy)**

O &M expenses of biomass gasifier power projects are higher than the Rankine cycle based power projects. **(MNRE)**

Analysis and Decision

The Regulation provides the normative Capital cost as well as O & M expenses for biomass gasifier based projects for the year 2012-13 for determination of the levellised tariff. The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

H. Biogas based power projects

I. Capital Cost and Capital Subsidy

Comments;

Capital cost for bio-methanation plants should be in the range of 10-12 Cr. /MWe. **(GE Energy)**

As per the programme of MNRE for capital subsidy is, it is disbursed to the lender/s after successful commissioning of the project and it is not available upfront for the project. As such, the lender provides short term loan for that component (capital subsidy). The equity required for the project is 30% of the capital cost and not of the Net Amount. It is submitted that the capital subsidy available from MNRE is to be treated as short term loan component for the period of 18 months from financial close and Return on Equity needs to be considered on 30% component of the capital cost. **(Bharat Green Energy Pvt. Ltd., Transcarb Energy Pvt. Ltd.)**

Analysis and Decision

The review Capital Cost and accounting of the Capital Subsidy is not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

II. Operation & Maintenance Expenses

Comments:

It is to submit that the O &M expenses needs to be considered ₹ 80 Lakh/MW in view of high cost of yearly consumables, capital overhaul of biogas engine and normal O&M of the biogas based power plant. Proper O&M of the biogas based plant is the main ingredient to achieve 90% of Plant Load Factor as envisaged by the Hon'ble Commission to determine the tariff for such project

Analysis and Decision

The Regulation provides the normative O& M expenses for biogas based projects for the year 2012-13 and which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. Accordingly, the Commission has considered O&M cost norm for biogas power as ₹ 40 lakh/MW for FY 2012.13 for the determination of tariff.

The review of the same is not the subject matter of present regulatory process which has been initiated for determination of generic tariff.

Based on the suggestions received from the projects developers, Industry associations representing the biomass sector and Ministry of New and Renewable Energy (MNRE), the Commission has decided to constitute a Committee which will visit existing plants and conduct a detailed study on the performance/viability of such plants operating in the country including the prevailing biomass prices.

The generic levellised generation tariff for various renewable energy technologies, for FY 2012-13

1. The generic levellised generation tariff for various renewable energy technologies, for FY 2012-13 are discussed below:

USEFUL LIFE

2. Clause (aa) of sub-Regulation (1) of Regulation 2 of the RE Tariff Regulations defines 'useful life' in relation to a unit of a generating station (including evacuation system) to mean the following duration from the date of commercial operation (COD) of such generation facility:

Renewable Energy Projects	Years
Wind energy	25
Small Hydro	35
Biomass	20
Non-fossil fuel co-generation	20
Solar PV	25
Solar Thermal	25
Biomass Gasifier	20
Biogas	20

CONTROL PERIOD

3. Regulation 5 of the RE Tariff Regulations provides that the control period for determination of tariff for renewable energy projects (RE projects) shall be of five years. The first year of the control period is from FY 2012-13. The Proviso to the said regulation stipulates that the tariff determined for the RE projects commissioned during the control period shall continue to be applicable for the entire duration of the tariff period as specified in Regulation 6 of the RE Tariff Regulations.

TARIFF PERIOD

4. In terms of Regulation 6 of the RE Tariff Regulations, the tariff period in respect of the RE projects is as under:

Renewable Energy Projects	Years
Wind energy	13
Small Hydro below 5 MW	35
Small Hydro 5-25 MW	13
Biomass	13
Non-fossil fuel co-generation	13
Solar PV and Solar Thermal	25
Biomass Gasifier and Biogas	20

In terms of clauses (e) and (f) of the said regulation, the tariff period specified above shall be reckoned from the date of commercial operation of the RE projects and the tariff determined under the regulations shall be applicable for the duration of the tariff period.

TARIFF STRUCTURE

5. Clause (1) of Regulation 9 of the RE Regulations stipulates that the tariff for RE projects shall be single part tariff consisting of the following fixed cost components:

- (a) Return on equity;
- (b) Interest on loan capital;
- (c) Depreciation;
- (d) Interest on working capital;
- (e) Operation and maintenance expenses;

For renewable energy technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration, single part tariff with two components, fixed cost component and fuel cost component, is to be determined.

TARIFF DESIGN

6. In terms of Regulation 10 of the RE Tariff Regulations, the tariff design for renewable energy generating stations is as under:

"(1) The generic tariff shall be determined on levellised basis for the Tariff Period.

Provided that for renewable energy technologies having single part tariff with two components, tariff shall be determined on levellised basis considering the year of commissioning of the project for fixed cost component while the fuel cost component shall be specified on year of operation basis.

(2) For the purpose of levellised tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered.

(3) Levellisation shall be carried out for the 'useful life' of the Renewable Energy project while Tariff shall be specified for the period equivalent to 'Tariff Period.'"

LEVELLISED TARIFF

7. Levellised Tariff is calculated by carrying out levellisation for 'useful life' of each technology considering the discount factor for time value of money.

Discount Factor

The discount factor considered for this purpose is equal to the Post Tax weighted average cost of the capital on the basis of normative debt: equity ratio (70:30) specified in the Regulations. Considering the normative debt equity ratio and weighted average of the post tax rates for interest and equity component, the discount factor is calculated.

Interest Rate considered for the loan component (i.e.70%) of Capital Cost is 12.30% (as explained later). For equity component (i.e. 30%) rate of Return on Equity (ROE) considered at Post Tax ROE of 16% considered. The discount factor derived by this method for all technology is 10.62%.

CAPITAL COST

8. Regulation 12 of the RE Tariff Regulations stipulates that the norms for the capital cost as specified in the technology specific chapter shall be inclusive of all capital works like plant and machinery, civil works, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point. The Commission has specified the normative capital cost, applicable for the first year of control period i.e. FY 20012-13, for various RE technologies viz Wind Energy, Small Hydro Power, Biomass Power, Non-Fossil Fuel based Cogeneration, Solar PV, Solar Thermal, Biomass Gasifier and Biogas based power projects.

Technology specific capital cost of RE projects is discussed herein under:

(A) Capital Cost of Wind Energy for FY 2012-13

9. Regulation 24 provides that the capital cost for wind energy project shall include wind turbine generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost up to inter-connection point, financing charges and IDC.
10. The Commission under Regulation 24 (2) has specified the normative capital cost for wind energy projects as ₹ 575Lakh/MW for FY 2012-13.

(B) Capital cost of Small Hydro Projects for FY 2012-13

11. Small Hydro Projects for the purpose of the RE Tariff Regulations cover those projects which are located at the sites approved by the State Nodal Agencies/State Governments using new plant and machinery and with installed power plant capacity lower than or equal to 25 MW.

12. The Commission under Regulation 28 (1) has specified the normative capital cost for small hydro projects for FY 2012-13 as under:

Region	Project Size	Capital Cost (FY 2012-13) (₹ Lakh/ MW)
Himachal Pradesh, Uttarakhand and North Eastern States	Below 5 MW	770
	5 MW to 25 MW	700
Other States	Below 5 MW	600
	5 MW to 25 MW	550

(C) Capital Cost of Biomass based Power Projects for FY 2012-13

13. Biomass power project for the purpose of these Regulations covers the projects using new plant and machinery based on Rankine cycle technology application using water cooled condenser and biomass fuel sources where use of fossil fuel is limited to the extent of 15% of total fuel consumption on annual basis.

14. The Commission under Regulation 34 has specified the normative capital cost for the biomass power projects based on Rankine cycle technology application using water cooled condenser as ₹ 445 Lakh/MW for FY 2012-13.

(D) Capital Cost of Non-fossil fuel based Cogeneration Projects for FY 2012-13

15. Non-fossil based cogeneration has been defined as the process in which more than one form of energy is produced in a sequential manner by using biomass. As per Regulation 4(d) of the RE Tariff Regulations, a project to qualify as the non-fossil based co-

generation project must be using new plant and machinery with topping cycle mode of operation which uses the non-fossil fuel input for power generation and utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously, and where the sum of useful power output and half of useful thermal output is greater than 45% of the plant's energy consumption during the season.

16. The Commission under Regulation 47 has specified the normative capital cost for the Non-Fossil Fuel Based Cogeneration Projects as ₹ 420 Lakh/MW for FY 2012-13.

(E) Capital Cost of Solar PV based Power Projects for FY 2012-13

17. Solar Photo Voltaic (PV) power projects which directly convert solar energy into electricity using the crystalline silicon or thin film technology or any other technology as approved by the Ministry of New and Renewable Energy and are connected to the grid, qualify for the purpose of tariff determination under the RE Tariff Regulations.

18. The Commission under Regulation 57 has specified the normative capital cost for the Solar PV power projects as ₹ 1000 Lakh/MW for the FY 2012-13.

(F) Capital Cost of Solar Thermal based Power Projects for FY 2012-13

19. In order to qualify for tariff determination under the RE Tariff Regulations, Solar Thermal Power Project shall be based on concentrated solar power technologies with line focusing or point focusing as may be approved by the Ministry of New and Renewable Energy and which uses direct sunlight to generate sufficient heat to operate a conventional power cycle to generate electricity.

20. The Commission under Regulation 61 has specified the normative capital cost for the Solar Thermal power projects as ₹ 1300 Lakh/MW for the FY 2012-13.

(G) Capital Cost of Biomass Gasifier Power Projects for FY 2012-13

21. The Commission under Regulation 66 has specified the normative capital cost for the Biomass Gasifier power projects based on Rankine cycle shall be ₹ 550 Lakh/MW for

the FY 2012-13 and after taking into account of capital subsidy net project cost shall be ₹ 400Lakh/MW for the FY 2012-13.

(H) Capital Cost of Biogas based Power Projects for FY 2012-13

22. In order to qualify for tariff determination under the RE Tariff Regulations, grid connected biogas based power projects that uses 100% Biogas fired engine, coupled with Biogas technology for co-digesting agriculture residues, manure and other bio waste as may be approved by the Ministry of New and Renewable Energy.
23. The Commission under Regulation 76 has specified the normative capital cost for the Biogas based power projects shall be ₹ 1100 Lakh/MW for the FY 2012-13 and after taking into account of capital subsidy net project cost shall be ₹ 800Lakh/MW for the FY 2012-13.
24. The capital cost for the first year (i.e. FY 2012-13) of the control period in respect of the renewable energy power generating stations is summarized as under:

Renewable Energy Projects	Capital Cost Norm for FY 2011-12 (₹ Lakh/MW)
(1) Wind Energy Projects	575
(2) Small Hydro Projects	
(a) Himachal Pradesh, Uttarakhand and North Eastern States (less than 5 MW)	770
(b) Himachal Pradesh, Uttarakhand and North Eastern States (5MW to 25 MW)	700
(c) Other States (below 5 MW)	600
(d) Other States (5MW to 25 MW)	550
(3) Biomass Power Projects	445
(4) Non-fossil fuel based co-generation Power Projects	420
(5) Solar PV Power Projects	1000
(6) Solar Thermal Power Projects	1300
(7) Biomass Gasifier Power Projects	400

(8) Biogas Power Projects	800
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DEBT-EQUITY RATIO

25. Sub-Regulation (1) of Regulation 13 of the RE Tariff Regulations provides that the debt-equity ratio of 70:30 is to be considered for determination of generic tariff based on *suo-motu* petition.

26. Based on the debt equity ratio of 70:30, the debt and equity components of the normative capital cost for determination of tariff for the RE projects have been worked out as under:

Renewable Energy Projects	Debt (₹ Lakh)	Equity (₹ Lakh)
(1) Wind Energy (for all zones)	402.50	172.50
(2) Small Hydro		
(a) Himachal Pradesh, Uttarakhand and North Eastern States (below 5 MW)	539	231
(b) Himachal Pradesh, Uttarakhand and North Eastern States (5 MW to 25 MW)	490	210
(c) Other States (below 5 MW)	420	180
(d) Other States (5MW to 25 MW)	385	165
(3) Biomass	311.50	133.50
(4) Non-fossil fuel co-generation	294	126
(5) Solar PV	700	300
(6) Solar Thermal	910	390
(7) Biomass Gasifier based Power Projects	280	120
(8) Biogas based Power Projects	560	240

RETURN ON EQUITY

27. Sub-Regulation (1) of Regulation 16 of the RE Tariff Regulations provides that the value base for the equity shall be 30% of the capital cost for generic tariff

determination. Sub-Regulation (2) of the said Regulation stipulates the normative return on equity (ROE) as under:

- (a) 20% per annum for the first 10 years, and
- (b) 24% per annum from the 11th year onwards.

INTEREST ON LOAN

28. Sub-Regulation (1) of Regulation 14 of the RE Regulations provides that the loan tenure of 12 years is to be considered for the purpose of determination of tariff for RE projects. Sub-Regulation (2) of the said Regulation provides for computation of the rate of interest on loan as under:

“(a) The loans arrived at in the manner indicated in the Regulation 13 shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.

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

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

29. The weighted average State Bank of India (SBI) Base rate prevalent during the first six months has been considered for the determination of tariff, as shown in the table below:

Period from	Period to	Base rate	No of Days
01/04/2011	24/4/2011	8.25%	24
25/4/2011	05/11/2011	8.50%	17

05/12/2011	07/10/2011	9.25%	60
07/11/2011	08/12/2011	9.50%	33
13/8/2011	30/9/2011	10.00%	49
Average Base rate for FY 11-12		9.30%	183

Source: State Bank of India (www.statebankofindia.com)

30. In terms of the above, the computations of interest on loan carried out for determination of tariff in respect of the RE projects treating the value base of loan as 70% of the capital cost and the weighted average of Base rate prevalent during the first six months of the (i.e. 9.30%) plus 300 basis points (equivalent to interest rate of 12.30%).

DEPRECIATION

31. Regulation 15 of the RE Tariff Regulations provides for computation of depreciation in the following manner:

"(1) The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

(2) Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan period beyond loan tenure over useful life computed on 'Straight Line Method'. The depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 13th year onwards.

(3) Depreciation shall be chargeable from the first year of commercial operation. Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis".

32. In accordance with the above, the rate of depreciation for the first 12 years has been considered as 5.83% and the rate of depreciation from the 13th year onwards has been spread over the balance useful life of the RE project as under:

Details	Wind Energy	Small Hydro	Biomass	Non-fossil fuel co-generation	Solar PV	Solar Thermal	Biomass Gasifier	Biogas
Useful Life (in years)	25	35	20	20	25	25	20	20
Rate of depreciation for 12 years (%)	5.83	5.83	5.83	5.83	5.83	5.83	5.83	5.83
Rate of depreciation after first 12 years (%)	1.54	0.87	2.50	2.50	1.54	1.54	2.50	2.50

INTEREST ON WORKING CAPITAL

33. Regulation 17 of the RE Tariff Regulations provides for the working capital requirements of the RE projects as under:

“(1) The Working Capital requirement in respect of wind energy projects, Small Hydro Power, Solar PV and Solar thermal power projects shall be computed in accordance with the following:

Wind Energy / Small Hydro Power / Solar PV / Solar thermal

- a) Operation & Maintenance expenses for one month;*
- b) Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative CUF;*
- c) Maintenance spare @ 15% of operation and maintenance expenses*

(2) The Working Capital requirement in respect of biomass power projects and non-fossil fuel based co-generation projects shall be computed in accordance with the following clause :

Biomass(Rankine Cycle Technology), Biomass Gasifier, Biogas Power and Non-fossil fuel Co-generation

- a) Fuel costs for four months equivalent to normative PLF;
- b) Operation & Maintenance expense for one month;
- c) Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the target PLF;
- d) Maintenance spare @ 15% of operation and maintenance expenses

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

34. Receivables equivalent to two months of actual fixed cost and variable cost, (as applicable for biomass power and non-fossil fuel based co-generation) have been considered. As mentioned in the Para No. 34, interest rate considered as weighted average of State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points (equivalent to interest rate of 12.80%). The interest on working capital has been worked out as specified below for determination of tariff of the RE projects:

Details	Wind Energy	Small Hydro	Biomass, Biomass Gasifier and Biogas	Non-fossil fuel co-generation	Solar PV	Solar Thermal
(A) For Fixed charges						
(i) O&M expenses (month)	1	1	1	1	1	1
(ii) Maintenance	15	15	15	15	15	15

spares (%) of O&M expenses						
(iii) Receivables (months)	2	2	2	2	2	2
(B) For Variable Charges						
Biomass/Bagasse stock (months)	-	-	4	4	-	-
(C) Interest On Working Capital (%)	12.80	12.80	12.80	12.80	12.80	12.80

Source for SBI Base Rate: State Bank of India (www.statebankofindia.com)

OPERATION AND MAINTENANCE EXPENSES

35. Regulation 18 of the RE Tariff Regulations provides for Operation and Maintenance Expenses (O&M expenses) in respect of RE projects as under:

“Operation and Maintenance Expenses

(1) ‘Operation and Maintenance or O&M expenses’ shall comprise repair and maintenance (R&M), establishment including employee expenses and administrative & general expenses.

(2) Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified by the Commission subsequently in these Regulations for the first Year of Control Period.

(3) Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2012-13) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period”.

36. The normative O&M expenses for various RE technologies specified under the relevant provisions of the RE Tariff Regulations are as under:

(a) Wind Energy: Regulation 27 of RE Tariff Regulations provides that the normative O&M expenses for the first year of the control period (i.e. 2012-13) as ₹ 9 lakh per MW and shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(b) Small Hydro: Regulation 32 of RE Regulations provided for the normative O& M expenses for small hydro projects for the year 2012-13 which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff. The table below presents the normative O&M Expenses considered by the Commission for small hydro power for FY 2012-13;

Region	Project Size	O&M expenses (₹ Lakh/MW)
Himachal Pradesh, Uttarakhand and North Eastern States	Below 5 MW	25
	5 MW to 25 MW	18
Other States	Below 5 MW	20
	5 MW to 25 MW	14

(c) Biomass: Regulation 39 of RE Tariff Regulations provides that the normative O& M expenses for biomass based projects for the year 2012-13 shall be ₹ 24 Lakh per MW and which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(d) Non-fossil fuel co-generation: As per Regulation 55 of RE Tariff Regulations, the normative O&M Expenses for non-fossil fuel co-generation projects for the year 2012-13 has been specified as ₹ 16 Lakh per MW which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(e) Solar PV: Regulation 59 of RE Tariff Regulations provides that the normative O&M expenses for solar PV projects for the year 2012-13 shall be ₹ 11 Lakh per MW which

shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(f) Solar Thermal: Regulation 63 of the RE Tariff Regulations specified the normative O&M expenses for solar thermal power projects shall be ₹ 15 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(g) Biomass Gasifier: Regulation 71 of the RE Tariff Regulations specified the normative O&M expenses for solar thermal power projects shall be ₹ 40 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

(h) Biogas: Regulation 80 of the RE Tariff Regulations specified the normative O&M expenses for solar thermal power projects shall be ₹ 40 Lakh/MW for the first year of operation, which shall be escalated at the rate of 5.72% per annum over the tariff period for determination of the levellised tariff.

CAPACITY UTILISATION FACTOR

37. Regulations 26, 30, 58 and 62 of the RE Tariff Regulations specify the norms for Capacity Utilization Factor (CUF)/Plant Load Factor (PLF) in respect of the Wind Energy, Small Hydro, Solar PV and Solar Thermal based power generating stations as per the details given in the table below which has been considered for determination of tariff.

Renewable Energy Projects	CUF
(A) Wind Energy	
Annual Mean Wind Power Density (W/m ²)	
Wind zone - 1 (Upto 200)	20 %
Wind zone - 2 (201 - 250)	22 %
Wind zone - 3 (251 - 300)	25 %

Wind zone - 4 (301 - 400)	30 %
Wind zone - 5 (Above 400)	32 %
(B) Small Hydro	
(i) Himachal Pradesh, Uttarakhand and North Eastern States	45 %
(ii) Other States	30 %
(C) Solar PV	19 %
(D) Solar Thermal	23 %

PLANT LOAD FACTOR (PLF)

38. Regulations 36, 68 and 78 of the RE Tariff Regulations specify the plant load factor for Biomass, Biomass Gasifier and Biogas based renewable energy generating stations as given in the table below which has been considered for determination of fixed charges component of tariff.

Renewable Energy Projects	PLF
(A) Biomass	
(a) During stabilization (6 months)	60 %
(b) During remaining period of the first year (after stabilization)	70 %
(c) Second year onwards	80 %
(B) Biomass Gasifier	85 %
(C) Biogas	90 %

39. Regulation 49 of the RE Tariff Regulations stipulates the plant load factor for Non-fossil Fuel based Co-generation projects as under, computed on the basis of plant availability for number of operating days considering the operations during crushing season and off-season and load factor of 92%. The number of operating days for different States as specified in the Regulation 49(2) is as under:

States	Operating days	PLF
Uttar Pradesh and Andhra Pradesh	120 days (crushing)+ 60 days (off-season) = 180 days	45 %
Tamil Nadu and Maharashtra	180 days (crushing)+ 60 days (off-season) = 240 days	60 %
Other States	150 days (crushing) + 60 days (off-season) = 210 days	53 %

AUXILIARY POWER CONSUMPTION

40. Regulations 31, 37, 50, 64, 69 and 79 of the RE Tariff Regulations stipulate the auxiliary power consumption factor as under which has been considered for determination of tariff of the RE projects :

Renewable Energy Projects	Auxiliary Consumption Factor
Small Hydro	1 %
Biomass	10 %
Non-fossil fuel co-generation	8.5 %
Solar Thermal	10 %
Biomass Gasifier	10 %
Biogas	12 %

STATION HEAT RATE

41. The Station Heat Rates (SHR) specified under Regulations 38 and 51 of the RE Tariff Regulations for biomass and non-fossil fuel based co-generation projects are as under:

Renewable Energy Projects	SHR (kCal / kWh)

Biomass	4000
Non-fossil fuel co-generation (for power component)	3600

FUEL

(a) Fuel Mix

42. Sub-Regulation (1) of Regulation 40 of the RE Tariff Regulations stipulates that the Biomass based power generating stations are to be designed in a way that it uses different types of non-fossil fuels available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues etc. and other biomass fuels as may be approved by the Ministry of Non-Renewable Energy (MNRE). Sub-Regulation (2) of the said Regulations stipulates that the biomass power generating companies are to ensure fuel management plan to ensure adequate availability of fuel to meet the respective project requirements.

43. Regulation 70 of the RE Tariff Regulations stipulates that the normative specific fuel consumption shall be 1.25 kg per kWh for Biomass Gasifier based power generating stations.

44. Regulation 81 of the RE Tariff Regulations stipulates that the normative specific fuel consumption shall be 3 kg of substrate mix per kWh for Biogas based power generating stations.

(b) Use of fossil fuel

45. As per Regulation 41 of the RE Tariff Regulations, the use of fossil fuel is to be limited to the extent of 15% of total fuel consumption on annual basis and Regulation 42 of the RE Tariff Regulations provides the mechanism for monitoring the use of fossil fuel is as under:

“(1) The Project developer shall furnish to the State Nodal Agency, a monthly fuel usage statement and monthly fuel procurement statement duly certified by Chartered Accountant to the beneficiary (with a copy to appropriate agency appointed by the Commission for the purpose of monitoring the fossil and non-fossil fuel consumption) for each month, along with the monthly energy bill. The statement shall cover details such as -

- a) Quantity of fuel (in tonne) for each fuel type (biomass fuels and fossil fuels) consumed and procured during the month for power generation purposes,*
- b) Cumulative quantity (in tonne) of each fuel type consumed and procured till the end of that month during the year,*
- c) Actual (gross and net) energy generation (denominated in units) during the month,*
- d) Cumulative actual (gross and net) energy generation (denominated in units) until the end of that month during the year,*
- e) Opening fuel stock quantity (in tonne),*
- f) Receipt of fuel quantity (in tonne) at the power plant site and*
- g) Closing fuel stock quantity (in tonne) for each fuel type (biomass fuels and fossil fuels) available at the power plant site.*

(2) Non-compliance with the condition of fossil fuel usage by the project developer, during any financial year, shall result in withdrawal of applicability of tariff as per these Regulations for such biomass based power project”.

(c) Calorific value

46. Regulation 43 of the RE Tariff Regulations provides the calorific value of biomass fuel used for determination of tariff shall be at 3300 kCal/kg.

47. Regulation 52 of the of the RE Tariff Regulations provides the gross calorific value for bagasse to be considered in case of non-fossil fuel co-generation projects is 2250 kCal/kg and for the use of biomass fuels other than bagasse, the calorific value as specified above shall be applicable.

(d) Fuel cost

48. The Commission, in terms of Regulation 44 of the RE Tariff Regulations, has specified the biomass fuel price applicable during the period 2012-13 and has specified fuel price indexation mechanism, in case developer wishes to opt, for the remaining years of the control period. Accordingly, the biomass fuel price applicable for FY 2012-13 is as under:

State	Biomass price (₹/tonne)
Andhra Pradesh	2315
Haryana	2635
Maharashtra	2695
Punjab	2756
Rajasthan	2300
Tamil Nadu	2277
Uttar Pradesh	2355
Other States	2476

49. The Commission, in terms of Regulation 53 of the RE Tariff Regulations, has specified the price of bagasse applicable during the period 2012-13 and has specified fuel price indexation mechanism, in case developer wishes to opt, for the remaining years of the control period. The price of bagasse (for non-fossil fuel based co-generation projects) applicable for FY 2012-13 shall be as in the table below;

State	Bagasse Price (₹/tonne)
Andhra Pradesh	1307
Haryana	1859
Maharashtra	1832
Punjab	1636

Tamil Nadu	1408
Uttar Pradesh	1458
Other States	1583

50. The Commission, in terms of Regulation 73 of the RE Tariff Regulations, has specified the biomass fuel price during first year of the Control Period (i.e. FY 2012-13) as per Regulation 44 and has specified fuel price indexation mechanism for the Biomass Gasifier project developer.

51. The Commission, in terms of Regulation 82 of the RE Tariff Regulations, has specified the feed stock price during first year of the Control Period (i.e. FY 2012-13) at ₹ 990/MT(net of any cost recovery from digester effluent).

52. In case of Biomass Power Projects, non-fossil fuel based co-generation projects, Biomass Gasifier based power Projects and Biogas based power projects, variable component of tariff is calculated based on the fuel cost for FY 2012-13. This variable component will change each year based on whether a Renewable Energy Power Project developer opts for fuel price indexation or escalation factor of 5%. Hence, while calculating the total applicable tariff for biomass based power projects, and non-fossil fuel based co generation projects levellisation of only fixed component is considered and the variable component for the first year of operation (i.e. 2012-13) is specified.

Subsidy or incentive by the Central / State Government

53. Regulation 22 of the RE Tariff Regulations provides as under:

“The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations.

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:

i) Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate as per relevant provisions under Income Tax Act and corporate income tax rate.

ii) Capitalization of RE projects during second half of the fiscal year. Per unit benefit shall be derived on levelled basis at discount factor equivalent to Post Tax weighted average cost of capital”.

54. In terms of the above regulation, for the projects availing the benefit of accelerated depreciation as per applicable Income tax rate @ 32.445% (30% IT rate+ 5% surcharge +3% Education cess) has been considered. For the purpose of determining net depreciation benefits, depreciation @ 5.28% as per straight line method (Book depreciation as per Companies Act, 1956) has been compared with depreciation as per Income Tax rate i.e. 80% of the written down value method and depreciation for the first year has been calculated at the rate of 50% of 80% i.e. 40%, as project is capitalized during the second half of the financial year as per proviso (ii) to Regulation 22. Income tax benefits of accelerated depreciation, has been worked out as per normal tax rate on the net depreciation benefit. Per unit levelled accelerated depreciation benefit has been computed considering the post tax weighted average cost of capital as discount factor.

55. In the light of the discussion made in the preceding paragraphs, the generic tariffs of the following RE projects for the financial year 2012-13 have been determined as under:

Generic Tariff for RE Technologies for FY 2012-13

Particular	Levelled Total Tariff	Benefit of Accelerated Depreciation (if availed)	Net Levelled Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(₹ / kWh)	(₹/kWh)	(₹/kWh)
Wind Energy			
Wind Zone -1 (CUF 20%)	5.96	0.60	5.36

Wind Zone -2 (CUF 22%)	5.42	0.55	4.87		
Wind Zone -3 (CUF 25%)	4.77	0.48	4.29		
Wind Zone -4 (CUF 30%)	3.97	0.40	3.57		
Wind Zone -5 (CUF 32%)	3.73	0.38	3.35		
Small Hydro Power Project					
HP, Uttarakhand and NE States (Below 5MW)	4.14	0.32	3.82		
HP, Uttarakhand and NE States (5MW to 25 MW)	3.54	0.29	3.25		
Other States (Below 5 MW)	4.88	0.38	4.50		
Other States (5 MW to 25 MW)	4.16	0.34	3.82		
State	Levelling Fixed Cost	Variable Cost (FY 2012-13)	Applicable Tariff Rate (FY 2012-13)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)
Biomass Power Project					
Andhra Pradesh	2.06	3.12	5.18	0.13	5.05
Haryana	2.10	3.55	5.65	0.13	5.52
Maharashtra	2.11	3.63	5.74	0.13	5.61
Punjab	2.12	3.71	5.83	0.13	5.70
Rajasthan	2.06	3.10	5.16	0.13	5.03
Tamil Nadu	2.06	3.07	5.12	0.13	4.99
Uttar Pradesh	2.07	3.17	5.24	0.13	5.11
Others	2.08	3.33	5.42	0.13	5.29
Non-Fossil Fuel based Cogeneration					

Andhra Pradesh	2.77	2.29	5.06	0.21	4.85
Haryana	2.48	3.25	5.73	0.18	5.55
Maharashtra	2.22	3.20	5.42	0.16	5.26
Punjab	2.44	2.86	5.30	0.18	5.12
Tamil Nadu	2.15	2.46	4.61	0.16	4.45
Uttar Pradesh	2.80	2.55	5.35	0.21	5.14
Others	2.43	2.77	5.20	0.18	5.02

Solar PV and Solar Thermal			
Particular	Levellised Total Tariff (FY2012-13)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(₹ / kWh)	(₹/ kWh)	(₹/ kWh)
Solar PV	10.39	1.04	9.35
Solar Thermal	12.46	1.24	11.22

State	Levellised Fixed Cost	Variable Cost (FY 2012-13)	Applicable Tariff Rate (FY 2012-13)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(₹/ kWh)	(₹/ kWh)	(₹/ kWh)	(₹/ kWh)	(₹/ kWh)
Biomass Gasifier Power Project					
Andhra Pradesh	2.29	3.22	5.51	0.11	5.40
Haryana	2.34	3.66	6.00	0.11	5.89

State	Levellised Fixed Cost	Variable Cost (FY 2012-13)	Applicable Tariff Rate (FY 2012-13)	Benefit of Accelerated Depreciation (if availed)	Net Levellised Tariff (upon adjusting for Accelerated Depreciation benefit) (if availed)
	(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)	(₹/kWh)
Maharashtra	2.35	3.74	6.09	0.11	5.98
Punjab	2.36	3.83	6.19	0.11	6.08
Rajasthan	2.29	3.19	5.48	0.11	5.37
Tamil Nadu	2.28	3.16	5.44	0.11	5.33
Uttar Pradesh	2.29	3.27	5.56	0.11	5.45
Others	2.32	3.44	5.76	0.11	5.65
Biogas based Cogeneration					
Biogas	3.06	3.38	6.44	0.21	6.23

56. The detailed computations for the generic tariff for various RE technologies have been enclosed to this Order as per the details given hereunder:

S No	Renewable Energy Projects	Annexure
A	Wind Power Projects	
	Wind Zone-I	Annexure 1A
	Wind Zone-II	Annexure 1B
	Wind Zone III	Annexure 1C
	Wind Zone IV	Annexure 1D
	Wind Zone V	Annexure 1E

S No	Renewable Energy Projects	Annexure
B	Small Hydro Power Projects	
	Projects Less than 5 MW for HP, Uttarakhand and NE States	Annexure 2A
	Projects between 5 MW and 25 MW for HP, Uttarakhand and NE States	Annexure 2B
	Projects less than 5 MW for other States	Annexure 2C
	Projects between 5 MW and 25 MW for other States	Annexure 2D
C	Biomass Power Projects	
	Andhra Pradesh	Annexure 3A
	Haryana	Annexure 3B
	Maharashtra	Annexure 3C
	Punjab	Annexure 3D
	Rajasthan	Annexure 3E
	Uttar Pradesh	Annexure 3F
	Tamil Nadu	Annexure 3G
	Others	Annexure 3H
D	Non-Fossil Fuel Based Cogeneration	
	Andhra Pradesh	Annexure 4A
	Haryana	Annexure 4B
	Maharashtra	Annexure 4C
	Punjab	Annexure 4D
	Uttar Pradesh	Annexure 4E
	Tamil Nadu	Annexure 4F
	Others	Annexure 4G
E	Solar Projects	

Solar PV Projects	Annexure 5A
Solar Thermal Projects	Annexure 6A

F Biomass Gasifier Power Projects

Andhra Pradesh	Annexure 7A
Haryana	Annexure 7B
Maharashtra	Annexure 7C
Punjab	Annexure 7D
Rajasthan	Annexure 7E
Uttar Pradesh	Annexure 7F
Tamil Nadu	Annexure 7G
Others	Annexure 7H

G Biogas based Power Projects Annexure 8A

Sd/- (M. Deena Dayalan) Member	Sd/- (V. S. Verma) Member	Sd/- (Dr. Pramod Deo) Chairperson
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Assumptions: Wind Energy Projects						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Wind Zone 1	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	20%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	<u>Capital Cost/MW</u>	Power Plant Cost	Rs Lacs/MW	575.00	
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period	Years	13	
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	402.50	
			Total Equity Amout	Rs Lacs	172.50	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	402.50
				Moratorium Period	years	0
				Repayment Period(incld Moratorium)	years	12
				Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs	172.50
				16% Return on Equity for first 10 years	% p.a	20.00%
				RoE Period	Year	10
				Return on Equity 11th year onwards	% p.a	24.00%
Weighted average of ROE		22.40%				
Discount Rate		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate for first 12 years	%	5.83%
				Depreciation Rate 13th year onwards	%	1.54%
				Years for 5.83% rate		12
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>	Interest On Working Capital	%	12.80%
6	Operation & Maintenance	<u>Power plant (FY12-13)</u>		Rs Lacs/MW	9.00	
			<u>Total O & M Expenses Escalation</u>	%	5.72%	

Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross/Net Generation	MU		1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	
Fixed Cost																												
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M Expenses	Rs Lakh		9.00	9.51	10.06	10.63	11.24	11.89	12.57	13.28	14.04	14.85	15.70	16.59	17.54	18.55	19.61	20.73	21.92	23.17	24.49	25.90	27.38	28.94	30.60	32.35	34.20	
Depreciation	Rs Lakh		33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Interest on term loan	Rs Lakh		47.44	43.32	39.19	35.07	30.94	26.82	22.69	18.57	14.44	10.31	6.19	2.06	0.00	6.19	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.99	2.93	2.86	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.59	2.55	2.01	2.20	2.17	2.18	2.24	2.31	2.38	2.45	2.53	2.61	2.70	2.79	2.88	
Return on Equity	Rs Lakh		34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40
Total Fixed Cost	Rs Lakh		127.47	123.80	120.16	116.55	112.97	109.43	105.93	102.47	99.06	95.69	92.42	89.25	86.15	83.10	80.10	77.15	74.25	71.40	68.60	65.85	63.15	60.50	57.90	55.35	52.85	
Levallised tariff corresponding to Useful life																												
Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M expn	Rs/kWh	0.82	0.51	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.00	1.06	1.12	1.19	1.25	1.33	1.40	1.48	1.57	1.66	1.75	1.85	1.96	
Depreciation	Rs/kWh	1.58	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	
Int. on term loan	Rs/kWh	1.31	2.71	2.48	2.24	2.01	1.77	1.53	1.30	1.06	0.83	0.59	0.35	0.12	0.00	0.35	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh	0.15	0.17	0.17	0.16	0.16	0.16	0.15	0.15	0.15	0.14	0.14	0.15	0.15	0.12	0.13	0.12	0.12	0.13	0.13	0.14	0.14	0.14	0.15	0.15	0.16	0.17	
RoE	Rs/kWh	2.10	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	1.97	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	
Total COG	Rs/kWh	5.96	7.29	7.08	6.88	6.67	6.46	6.26	6.06	5.86	5.67	5.48	5.29	5.10	4.91	4.72	4.53	4.34	4.15	3.96	3.77	3.58	3.39	3.20	3.01	2.82	2.63	
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	
Levallised Tariff	5.96	Rs/Unit																										

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	575.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	15.18	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	16.56	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	230.00	276.00	55.20	11.04	2.21	0.44	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	214.82	245.64	24.84	-19.32	-28.15	-29.92	-30.27	-30.34	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-16.56	0.00	0.00
Tax Benefit	Rs Lakh	69.70	79.70	8.06	-6.27	-9.13	-9.71	-9.82	-9.84	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-5.37	0.00	0.00
Energy generation	MU	0.88	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.15

Levellised benefit	0.60	Rs/Unit
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Assumptions: Wind Energy Projects						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Wind Zone 2	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	22%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	<u>Capital Cost/MW</u>	Power Plant Cost	Rs Lacs/MW	575.00	
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period	Years	13	
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	402.50	
			Total Equity Amout	Rs Lacs	172.50	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	402.50
				Moratorium Period	years	0
				Repayment Period(incld Moratorium)	years	12
				Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs	172.50
				16% Return on Equity for first 10 years	% p.a	20.00%
				RoE Period	Year	10
				Return on Equity 11th year onwards	% p.a	24.00%
Weighted average of ROE		22.40%				
Discount Rate		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate for first 12 years	%	5.83%
				Depreciation Rate 13th year onwards	%	1.54%
				Years for 5.83% rate		12
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>			
			Interest On Working Capital	%	12.80%	
6	Operation & Maintenance	<u>Power plant (FY12-13)</u>		Rs Lacs/MW	9.00	
		<u>Total O & M Expenses Escalation</u>		%	5.72%	

Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross/Net Generation	MU		1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	1.92	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M Expenses	Rs Lakh		9.00	9.51	10.06	10.63	11.24	11.89	12.57	13.28	14.04	14.85	15.70	16.59	17.54	18.55	19.61	20.73	21.92	23.17	24.49	25.90	27.38	28.94	30.60	32.35	34.20	
Depreciation	Rs Lakh		33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Interest on term loan	Rs Lakh		47.44	43.32	39.19	35.07	30.94	26.82	22.69	18.57	14.44	10.31	6.19	2.06	0.00	6.19	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.99	2.93	2.86	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.59	2.55	2.01	2.20	2.17	2.18	2.24	2.31	2.38	2.45	2.53	2.61	2.70	2.79	2.88	
Return on Equity	Rs Lakh		34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40
Total Fixed Cost	Rs Lakh		127.47	123.80	120.16	116.55	112.97	109.43	105.93	102.47	99.06	95.69	92.42	89.15	85.80	82.48	79.16	75.84	72.52	69.20	65.88	62.56	59.24	55.92	52.60	49.28	45.96	42.64
Levallised tariff corresponding to Useful life																												
Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M expn	Rs/kWh	0.75	0.47	0.49	0.52	0.55	0.58	0.62	0.65	0.69	0.73	0.77	0.82	0.86	0.91	0.96	1.02	1.08	1.14	1.21	1.27	1.35	1.42	1.51	1.59	1.68	1.78	
Depreciation	Rs/kWh	1.44	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	1.74	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46	
Int. on term loan	Rs/kWh	1.19	2.47	2.25	2.04	1.82	1.61	1.39	1.18	0.97	0.75	0.54	0.32	0.11	0.00	0.32	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.14	0.16	0.15	0.15	0.15	0.14	0.14	0.14	0.13	0.13	0.13	0.13	0.13	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.15
RoE	Rs/kWh	1.91	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	1.79	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Total COG	Rs/kWh	5.42	6.63	6.44	6.25	6.06	5.88	5.69	5.51	5.33	5.15	4.98	4.81	4.64	4.47	4.30	4.13	3.96	3.79	3.62	3.45	3.28	3.11	2.94	2.77	2.60	2.43	2.26
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	
Levallised Tariff	5.42	Rs/Unit																										

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	575.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	15.18	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	16.56	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	230.00	276.00	55.20	11.04	2.21	0.44	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	214.82	245.64	24.84	-19.32	-28.15	-29.92	-30.27	-30.34	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-16.56	0.00	0.00
Tax Benefit	Rs Lakh	69.70	79.70	8.06	-6.27	-9.13	-9.71	-9.82	-9.84	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-5.37	0.00	0.00
Energy generation	MU	0.96	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93	1.93
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levillised benefit	0.55	Rs/Unit
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Assumptions: Wind Energy Projects						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Wind Zone 3	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	25%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	<u>Capital Cost/MW</u>	Power Plant Cost	Rs Lacs/MW	575.00	
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period	Years	13	
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	402.50	
			Total Equity Amout	Rs Lacs	172.50	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	402.50
				Moratorium Period	years	0
				Repayment Period(incld Moratorium)	years	12
				Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs	172.50
				16% Return on Equity for first 10 years	% p.a	20.00%
				RoE Period	Year	10
				Return on Equity 11th year onwards	% p.a	24.00%
Weighted average of ROE		22.40%				
Discount Rate		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate for first 12 years	%	5.83%
				Depreciation Rate 13th year onwards	%	1.54%
				Years for 5.83% rate		12
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>			
			Interest On Working Capital	%	12.80%	
6	Operation & Maintenance	<u>Power plant (FY12-13)</u>		Rs Lacs/MW	9.00	
			<u>Total O & M Expenses Escalation</u>	%	5.72%	

Determination of Tariff Component																											
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18	2.18
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		9.00	9.51	10.06	10.63	11.24	11.89	12.57	13.28	14.04	14.85	15.70	16.59	17.54	18.55	19.61	20.73	21.92	23.17	24.49	25.90	27.38	28.94	30.60	32.35	34.20
Depreciation	Rs Lakh		33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Interest on term loan	Rs Lakh		47.44	43.32	39.19	35.07	30.94	26.82	22.69	18.57	14.44	10.31	6.19	2.06	0.00	6.19	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.99	2.93	2.86	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.59	2.55	2.01	2.20	2.17	2.18	2.24	2.31	2.38	2.45	2.53	2.61	2.70	2.79	2.88
Return on Equity	Rs Lakh		34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40
Total Fixed Cost	Rs Lakh		127.47	123.80	120.16	116.55	112.97	109.43	105.93	102.47	99.06	95.69	92.42	89.15	85.80	82.48	79.16	75.84	72.52	69.20	65.88	62.56	59.24	55.92	52.60	49.28	45.96
Levallised tariff corresponding to Useful life																											
Per Unit Cost of Generation	Unit	Levllised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M expn	Rs/kWh	0.66	0.41	0.44	0.46	0.49	0.51	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.00	1.06	1.12	1.19	1.25	1.32	1.40	1.48	1.57
Depreciation	Rs/kWh	1.27	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	1.54	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
Int. on term loan	Rs/kWh	1.04	2.17	1.98	1.79	1.61	1.42	1.23	1.04	0.85	0.66	0.47	0.28	0.09	0.00	0.28	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.12	0.14	0.13	0.13	0.13	0.13	0.12	0.12	0.12	0.12	0.11	0.12	0.12	0.09	0.10	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.13	0.13
RoE	Rs/kWh	1.68	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
Total COG	Rs/kWh	4.77	5.84	5.67	5.50	5.34	5.17	5.01	4.85	4.69	4.53	4.38	4.22	4.07	3.91	3.75	3.59	3.43	3.27	3.11	2.95	2.79	2.63	2.47	2.31	2.15	2.00
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089
Levllised Tariff	4.77	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	575.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	15.18	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	16.56	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelrated Deprn.	Rs Lakh	230.00	276.00	55.20	11.04	2.21	0.44	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	214.82	245.64	24.84	-19.32	-28.15	-29.92	-30.27	-30.34	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-16.56	0.00	0.00
Tax Benefit	Rs Lakh	69.70	79.70	8.06	-6.27	-9.13	-9.71	-9.82	-9.84	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-5.37	0.00	0.00
Energy generation	MU	1.10	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19	2.19
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.15

Levellised benefit	0.48	Rs/Unit
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Assumptions: Wind Energy Projects						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Wind Zone 4	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	30%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	<u>Capital Cost/MW</u>	Power Plant Cost	Rs Lacs/MW	575.00	
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period	Years	13	
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	402.50	
			Total Equity Amout	Rs Lacs	172.50	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	402.50
				Moratorium Period	years	0
				Repayment Period(incld Moratorium)	years	12
				Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs	172.50
				16% Return on Equity for first 10 years	% p.a	20.00%
				RoE Period	Year	10
				Return on Equity 11th year onwards	% p.a	24.00%
Weighted average of ROE		22.40%				
Discount Rate		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate for first 12 years	%	5.83%
				Depreciation Rate 13th year onwards	%	1.54%
				Years for 5.83% rate		12
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>	Interest On Working Capital	%	12.80%
6	Operation & Maintenance	<u>Power plant (FY12-13)</u>	Total O & M Expenses Escalation	Rs Lacs/MW	9.00	
				%	5.72%	

Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross/Net Generation	MU		2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62	2.62
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		9.00	9.51	10.06	10.63	11.24	11.89	12.57	13.28	14.04	14.85	15.70	16.59	17.54	18.55	19.61	20.73	21.92	23.17	24.49	25.90	27.38	28.94	30.60	32.35	34.20
Depreciation	Rs Lakh		33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Interest on term loan	Rs Lakh		47.44	43.32	39.19	35.07	30.94	26.82	22.69	18.57	14.44	10.31	6.19	2.06	0.00	6.19	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.99	2.93	2.86	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.59	2.55	2.01	2.20	2.17	2.18	2.24	2.31	2.38	2.45	2.53	2.61	2.70	2.79	2.88
Return on Equity	Rs Lakh		34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40
Total Fixed Cost	Rs Lakh		127.47	123.80	120.16	116.55	112.97	109.43	105.93	102.47	99.06	95.69	92.42	89.15	85.90	82.71	79.58	76.50	73.48	70.51	67.59	64.72	61.90	59.13	56.41	53.74	51.12
Levillised tariff corresponding to Useful life																											
Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M expn	Rs/kWh	0.55	0.34	0.36	0.38	0.41	0.43	0.45	0.48	0.51	0.54	0.57	0.60	0.63	0.67	0.71	0.75	0.79	0.84	0.88	0.93	0.99	1.04	1.10	1.17	1.23	1.30
Depreciation	Rs/kWh	1.06	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.28	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34
Int. on term loan	Rs/kWh	0.87	1.81	1.65	1.50	1.34	1.18	1.02	0.87	0.71	0.55	0.39	0.24	0.08	0.00	0.24	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.10	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.10	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11
RoE	Rs/kWh	1.40	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.32	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58	1.58
Total COG	Rs/kWh	3.97	4.86	4.72	4.58	4.45	4.31	4.17	4.04	3.91	3.78	3.65	3.79	3.67	2.66	2.94	2.83	2.79	2.84	2.89	2.94	3.00	3.06	3.12	3.19	3.26	3.33
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089
Levillised Tariff	3.97	Rs/Unit																									

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	575.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	15.18	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	16.56	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	230.00	276.00	55.20	11.04	2.21	0.44	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	214.82	245.64	24.84	-19.32	-28.15	-29.92	-30.27	-30.34	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-16.56	0.00	0.00
Tax Benefit	Rs Lakh	69.70	79.70	8.06	-6.27	-9.13	-9.71	-9.82	-9.84	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-5.37	0.00	0.00
Energy generation	MU	1.31	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63	2.63
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levellised benefit	0.40	Rs/Unit
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Assumptions: Wind Energy Projects						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Wind Zone 5	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	32%	
			Deration Factor	%	0.00%	
			Useful Life	Years	25	
2	Project Cost	<u>Capital Cost/MW</u>	Power Plant Cost	Rs Lacs/MW	575.00	
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period	Years	13	
			Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	402.50	
			Total Equity Amount	Rs Lacs	172.50	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	402.50
				Moratorium Period	years	0
				Repayment Period(incld Moratorium)	years	12
				Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs	172.50
				16% Return on Equity for first 10 years	% p.a	20.00%
				RoE Period	Year	10
				Return on Equity 11th year onwards	% p.a	24.00%
Weighted average of ROE		22.40%				
Discount Rate		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate for first 12 years	%	5.83%
				Depreciation Rate 13th year onwards	%	1.54%
				Years for 5.83% rate		12
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>	Interest On Working Capital	%	12.80%
6	Operation & Maintenance	<u>Power plant (FY12-13)</u>	Total O & M Expenses Escalation	Rs Lacs/MW	9.00	
				%	5.72%	

Determination of Tariff Component

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross/Net Generation	MU		2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M Expenses	Rs Lakh		9.00	9.51	10.06	10.63	11.24	11.89	12.57	13.28	14.04	14.85	15.70	16.59	17.54	18.55	19.61	20.73	21.92	23.17	24.49	25.90	27.38	28.94	30.60	32.35	34.20	
Depreciation	Rs Lakh		33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	33.54	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85	8.85
Interest on term loan	Rs Lakh		47.44	43.32	39.19	35.07	30.94	26.82	22.69	18.57	14.44	10.31	6.19	2.06	0.00	6.19	2.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		2.99	2.93	2.86	2.80	2.75	2.69	2.64	2.58	2.53	2.48	2.59	2.55	2.01	2.20	2.17	2.18	2.24	2.31	2.38	2.45	2.53	2.61	2.70	2.79	2.88	
Return on Equity	Rs Lakh		34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	34.50	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40	41.40
Total Fixed Cost	Rs Lakh		127.47	123.80	120.16	116.55	112.97	109.43	105.93	102.47	99.06	95.69	99.42	96.15	69.80	77.18	74.08	73.16	74.40	75.72	77.12	78.59	80.15	81.80	83.54	85.38	87.33	
Levallised tariff corresponding to Useful life																												
Per Unit Cost of Generation	Unit	Levllised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M expn	Rs/kWh	0.51	0.32	0.34	0.36	0.38	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09	1.16	1.22	
Depreciation	Rs/kWh	0.99	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32	0.32
Int. on term loan	Rs/kWh	0.82	1.70	1.55	1.40	1.25	1.11	0.96	0.81	0.66	0.52	0.37	0.22	0.07	0.00	0.22	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.09	0.11	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.09	0.09	0.09	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10
RoE	Rs/kWh	1.31	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48	1.48
Total COG	Rs/kWh	3.73	4.56	4.43	4.30	4.17	4.04	3.91	3.79	3.66	3.54	3.42	3.56	3.44	2.50	2.76	2.65	2.62	2.66	2.71	2.76	2.81	2.87	2.93	2.99	3.05	3.12	
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	
Levllised Tariff	3.73	Rs/Unit																										

Determination of Accelerated Depreciation for Wind Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	575.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	
Book Depreciation	Rs Lakh	15.18	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	30.36	16.56	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	230.00	276.00	55.20	11.04	2.21	0.44	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	214.82	245.64	24.84	-19.32	-28.15	-29.92	-30.27	-30.34	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-30.36	-16.56	0.00	0.00	
Tax Benefit	Rs Lakh	69.70	79.70	8.06	-6.27	-9.13	-9.71	-9.82	-9.84	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-9.85	-5.37	0.00	0.00
Energy generation	MU	1.40	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit	0.38	Rs/Unit
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Select Case

1

Small Hydro: Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	HP, Uttarakhand, NE States
					Less than 5 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % %	1 45% 1% 0.00% 35
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	770
3	Sources of Fund	<u>Debt: Equity</u>	Tariff Period Debt Equity Total Debt Amount Total Equity Amount	Years % % Rs Lacs Rs Lacs	35 70% 30% 539 231
		<u>Debt Component</u>	Loan Amount Moratorium Period Repayment Period(incld Moratorium) Intrest Rate	Rs Lacs years years %	539.00 0 12 12.30%
		<u>Equity Component</u>	Equity amount Normative ROE (Post-tax) Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate	Rs Lacs % % p.a Year % p.a % %	231.00 16% 20% 10 24.00% 22.86% 10.62%
4	Financial Assumptions	<u>Depreciation</u>	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 12 years Depreciation Rate 13th year onwards Years for 5.83% rate	% % Yes/No % % %	32.45% 20.00% Yes 5.83% 0.87% 12
5	Working Capital	<u>For Fixed Charges</u> O&M Charges Maintenance Spare Receivables for Debtors Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.80%
6	Operation & Maintenance	Power plant (FY 12-13) <u>Total O & M Expenses Escalation</u>		%	25.00 5.72%

Determination of Tariff Component:																																					
Units Generation	Unit	Year→	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Fixed Cost	Unit	Year→	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M Expenses	Rs Lakh		25.00	26.43	27.94	29.54	31.23	33.02	34.90	36.90	39.01	41.24	43.60	46.10	48.73	51.52	54.47	57.58	60.88	64.36	68.04	71.93	76.05	80.40	85.00	89.86	95.00	100.43	106.18	112.25	118.67	125.46	132.63	140.22	148.24	156.72	165.69
Depreciation	Rs Lakh		44.92	44.92	44.92	44.92	44.92	44.92	44.92	44.92	44.92	44.92	44.92	44.92	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Interest on term loan	Rs Lakh		63.53	58.01	52.49	46.96	41.44	35.91	30.39	24.86	19.34	13.81	8.29	2.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Cap	Rs Lakh		4.68	4.63	4.59	4.56	4.52	4.50	4.47	4.46	4.45	4.44	4.65	4.66	3.90	4.05	4.20	4.37	4.54	4.72	4.91	5.12	5.33	5.56	5.80	6.06	6.32	6.61	6.91	7.23	7.56	7.92	8.29	8.69	9.11	9.55	10.02
Return on Equity	Rs Lakh		46.20	46.20	46.20	46.20	46.20	46.20	46.20	46.20	46.20	46.20	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44	55.44
Total Fixed Cost	Rs Lakh		184.33	180.19	176.14	172.17	168.31	164.54	160.88	157.34	153.91	150.62	156.90	153.88	114.77	117.71	120.81	124.09	127.55	131.22	135.09	139.19	143.52	148.09	152.93	158.05	163.46	169.18	175.22	181.61	188.37	195.51	203.06	211.05	219.49	228.41	237.84
Levillised tariff corresponding to Useful life																																					
Per Unit Cost of Gen	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M expn	Rs/kWh	1.14	0.64	0.68	0.72	0.76	0.80	0.85	0.89	0.95	1.00	1.06	1.12	1.18	1.25	1.32	1.40	1.48	1.56	1.65	1.74	1.84	1.95	2.06	2.18	2.30	2.43	2.57	2.72	2.88	3.04	3.21	3.40	3.59	3.80	4.02	4.25
Depreciation	Rs/kWh	0.88	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
Int. on term loan	Rs/kWh	0.73	1.63	1.49	1.34	1.20	1.06	0.92	0.78	0.64	0.50	0.35	0.21	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.12	0.12	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.26
RoE	Rs/kWh	1.27	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.18	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42	1.42
Total COG	Rs/kWh	4.14	4.72	4.62	4.51	4.41	4.31	4.22	4.12	4.03	3.94	3.86	4.02	3.94	2.94	3.02	3.10	3.18	3.27	3.36	3.46	3.57	3.68	3.79	3.92	4.05	4.19	4.33	4.49	4.65	4.83	5.01	5.20	5.41	5.62	5.85	6.09
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	0.080	0.073	0.066	0.059	0.054	0.048	0.044	0.040	0.036	0.032
Levillised Tariff	4.14	Rs/Unit																																			

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20%
Income Tax (Normal Rates)	32.45%
Capital Cost	770.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	20.33	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	40.66	22.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation																																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Accelerated Deprn.	Rs Lakh	308.00	369.60	73.92	14.78	2.96	0.59	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	287.67	328.94	33.26	-25.87	-37.70	-40.06	-40.54	-40.63	-40.65	-40.66	-40.66	-40.66	-40.66	-40.66	-40.66	-40.66	-40.66	-22.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	93.34	106.73	10.79	-8.39	-12.23	-13.00	-13.15	-13.18	-13.19	-13.19	-13.19	-13.19	-13.19	-13.19	-13.19	-13.19	-13.19	-7.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	1.95	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	
Per unit benefit	Rs/Unit	4.78	2.73	0.28	-0.22	-0.31	-0.33	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.34	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0.03	

Tax Benefit Levelised	11.95
Electricity Generation (Levelised)	3.72
Levelised benefit	0.32 Rs/Unit

Select Case

2

Small Hydro: Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	HP, Uttarakhand, NE States
					5 MW to 25 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % %	1 45% 1% 0.00%
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	700
3	Sources of Fund	Debt: Equity	Tariff Period Debt Equity Total Debt Amount Total Equity Amount	Years % % Rs Lacs Rs Lacs	13 70% 30% 490 210
		Debt Component	Loan Amount Moratorium Period Repayment Period(incld Moratorium) Intrest Rate	Rs Lacs years years %	490.00 0 12 12.30%
		Equity Component	Equity amount Normative ROE (Post-tax) Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate	Rs Lacs % % p.a Year % p.a % %	210.00 16% 20% 10 24.00% 22.86% 10.62%
4	Financial Assumptions	Depreciation	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 12 years Depreciation Rate 13th year onwards Years for 5.83% rate	% % Yes/No % % %	32.45% 20.00% Yes 5.83% 0.87% 12
5	Working Capital	For Fixed Charges O&M Charges Maintenance Spare Receivables for Debtors Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.80%
6	Operation & Maintenance	Power plant (FY 12-13) Total O & M Expenses Escalation		%	18.00 5.72%

Determination of Tariff Component:																																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
O&M Expenses	Rs Lakh		18.00	19.03	20.12	21.27	22.49	23.77	25.13	26.57	28.09	29.70	31.39	33.19	35.09	37.10	39.22	41.46	43.83	46.34	48.99	51.79	54.75	57.89	61.20	64.70	68.40	72.31	76.45	80.82	85.44	90.33	95.50	100.96	106.73	112.84	119.29	
Depreciation	Rs Lakh		40.83	40.83	40.83	40.83	40.83	40.83	40.83	40.83	40.83	40.83	40.83	40.83	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09	6.09
Interest on term loan	Rs Lakh		57.76	52.74	47.71	42.69	37.67	32.65	27.62	22.60	17.58	12.56	7.53	2.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Cap	Rs Lakh		4.01	3.95	3.90	3.85	3.80	3.76	3.72	3.69	3.66	3.63	3.80	3.78	3.07	3.17	3.28	3.40	3.52	3.66	3.79	3.94	4.10	4.26	4.43	4.62	4.81	5.01	5.23	5.46	5.70	5.96	6.23	6.51	6.82	7.13	7.47	
Return on Equity	Rs Lakh		42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40	50.40
Total Fixed Cost	Rs Lakh		162.60	158.55	154.56	150.64	146.79	143.01	139.31	135.69	132.16	128.72	133.96	130.71	94.64	96.75	98.99	101.35	103.84	106.48	109.27	112.22	115.34	118.63	122.12	125.80	129.69	133.81	138.16	142.77	147.63	152.77	158.21	163.96	170.04	176.46	183.25	
Levilled tariff corresponding to Useful life																																						
Per Unit Cost of Gen	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
O&M expn	Rs/kWh	0.82	0.46	0.49	0.52	0.54	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.00	1.06	1.12	1.19	1.26	1.33	1.40	1.48	1.57	1.66	1.75	1.85	1.96	2.07	2.19	2.31	2.45	2.59	2.73	2.89	3.06	
Depreciation	Rs/kWh	0.80	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	
Int. on term loan	Rs/kWh	0.67	1.48	1.35	1.22	1.09	0.97	0.84	0.71	0.58	0.45	0.32	0.19	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.09	0.09	0.09	0.10	0.10	0.08	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.15	0.15	0.16	0.17	0.17	0.18	0.19	
RoE	Rs/kWh	1.15	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.08	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	1.29	
Total COG	Rs/kWh	3.54	4.17	4.06	3.96	3.86	3.76	3.66	3.57	3.48	3.39	3.30	3.43	3.35	2.43	2.48	2.54	2.60	2.66	2.73	2.80	2.88	2.96	3.04	3.13	3.22	3.32	3.43	3.54	3.66	3.78	3.91	4.05	4.20	4.36	4.52	4.70	
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	0.080	0.073	0.066	0.059	0.054	0.048	0.044	0.040	0.036	0.032	
Levilled Tariff	Rs/Unit	3.54																																				

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20%
Income Tax (Normal Rates)	32.45%
Capital Cost	700.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Book Depreciation	Rs Lakh	18.48	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	36.96	20.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Accelerated Deprn.	Rs Lakh	280.00	336.00	67.20	13.44	2.69	0.54	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	261.52	299.04	30.24	-23.52	-34.27	-36.42	-36.85	-36.94	-36.96	-36.96	-36.96	-36.96	-36.96	-36.96	-36.96	-36.96	-36.96	-20.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	84.85	97.02	9.81	-7.63	-11.12	-11.82	-11.96	-11.98	-11.99	-11.99	-11.99	-11.99	-11.99	-11.99	-11.99	-11.99	-11.99	-6.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	1.95	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	
Per unit benefit	Rs/Unit	4.35	2.49	0.25	-0.20	-0.28	-0.30	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.31	-0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.04	

Tax Benefit Levelised 10.86

Electricity Generation (Levelised) 3.72

Levelised benefit 0.29 Rs/Unit

Select Case

3

Small Hydro: Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Other States
					Less than 5 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % %	1 30% 1% 0.00% 35
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	600
3	Sources of Fund	Debt: Equity	Tariff Period Debt Equity Total Debt Amount Total Equity Amount	Years % % Rs Lacs Rs Lacs	35 70% 30% 420 180
		Debt Component	Loan Amount Moratorium Period Repayment Period(incl Moratorium) Intrest Rate	Rs Lacs years years %	420.00 0 12 12.30%
		Equity Component	Equity amount Normative ROE (Post-tax) Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate	Rs Lacs % % p.a Year % p.a % %	180.00 16% 20% 10 24.00% 22.86% 10.62%
4	Financial Assumptions	Depreciation	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 12 years Depreciation Rate 13th year onwards Years for 5.83% rate	% % Yes/No % % %	32.45% 20.00% Yes 5.83% 0.87% 12
5	Working Capital	For Fixed Charges O&M Charges Maintenance Spare Receivables for Debtors Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.80%
6	Operation & Maintenance	Power plant (FY 12-13) Total O & M Expenses Escalation			20.00 5.72%

Determination of Tariff Component:																																					
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Fixed Cost																																					
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M Expenses	Rs Lakh		20.00	21.14	22.35	23.63	24.98	26.41	27.92	29.52	31.21	32.99	34.88	36.88	38.99	41.22	43.57	46.07	48.70	51.49	54.43	57.55	60.84	64.32	68.00	71.89	76.00	80.35	84.94	89.80	94.94	100.37	106.11	112.18	118.59	125.38	132.55
Depreciation	Rs Lakh		35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	35.00	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22	5.22
Interest on term loan	Rs Lakh		49.51	45.20	40.90	36.59	32.29	27.98	23.68	19.37	15.07	10.76	6.46	2.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Cap	Rs Lakh		3.67	3.64	3.61	3.58	3.56	3.54	3.52	3.51	3.51	3.51	3.67	3.68	3.10	3.21	3.34	3.47	3.60	3.75	3.90	4.07	4.24	4.42	4.61	4.82	5.03	5.26	5.50	5.75	6.02	6.31	6.61	6.92	7.26	7.61	7.99
Return on Equity	Rs Lakh		36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	36.00	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20
Total Fixed Cost	Rs Lakh		144.18	140.99	137.86	134.81	131.83	128.93	126.13	123.41	120.79	118.27	123.21	120.91	90.50	92.85	95.33	97.95	100.72	103.65	106.75	110.03	113.49	117.16	121.03	125.12	129.45	134.02	138.86	143.97	149.38	155.09	161.13	167.52	174.27	181.41	188.96
Levilled tariff corresponding to Useful life																																					
Per Unit Cost of Gen	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
O&M expn	Rs/kWh	1.36	0.77	0.81	0.86	0.91	0.96	1.02	1.07	1.13	1.20	1.27	1.34	1.42	1.50	1.58	1.67	1.77	1.87	1.98	2.09	2.21	2.34	2.47	2.61	2.76	2.92	3.09	3.26	3.45	3.65	3.86	4.08	4.31	4.56	4.82	5.09
Depreciation	Rs/kWh	1.03	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	1.35	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
Int. on term loan	Rs/kWh	0.86	1.90	1.74	1.57	1.41	1.24	1.08	0.91	0.74	0.58	0.41	0.25	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.14	0.14	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.27	0.28	0.29	0.31
RoE	Rs/kWh	1.48	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Total COG	Rs/kWh	4.88	5.54	5.42	5.30	5.18	5.07	4.96	4.85	4.74	4.64	4.55	4.74	4.65	3.48	3.57	3.66	3.76	3.87	3.98	4.10	4.23	4.36	4.50	4.65	4.81	4.98	5.15	5.34	5.53	5.74	5.96	6.19	6.44	6.70	6.97	7.26
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	0.080	0.073	0.066	0.059	0.054	0.048	0.044	0.040	0.036	0.032
Levilled Tariff	4.88	Rs/Unit																																			

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20%
Income Tax (Normal Rates)	32.45%
Capital Cost	600.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
Book Depreciation	Rs Lakh	15.84	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Accelerated Depreciation																																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%			
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%			
Accelerated Deprn.	Rs Lakh	240.00	288.00	57.60	11.52	2.30	0.46	0.09	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Net Depreciation Benefit	Rs Lakh	224.16	256.32	25.92	-20.16	-29.38	-31.22	-31.59	-31.66	-31.68	-31.68	-31.68	-31.68	-31.68	-31.68	-31.68	-31.68	-31.68	-17.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Tax Benefit	Rs Lakh	72.73	83.16	8.41	-6.54	-9.53	-10.13	-10.25	-10.27	-10.28	-10.28	-10.28	-10.28	-10.28	-10.28	-10.28	-10.28	-10.28	-5.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Energy generation	MU	1.30	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60			
Per unit benefit	Rs/Unit	5.59	3.20	0.32	-0.25	-0.37	-0.39	-0.39	-0.39	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.40	-0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.04			
Tax Benefit Levelised		9.31																																				
Electricity Generation (Levelised)		2.48																																				
Levelised benefit	0.38 Rs/Unit																																					

Select Case

4

Small Hydro: Assumptions Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Other States
					5 MW to 25 MW
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Auxiliary Consumption Deration Factor Useful Life	MW % % %	1 30% 1% 0.00% 35
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	550
3	Sources of Fund	Debt: Equity	Tariff Period Debt Equity Total Debt Amount Total Equity Amount	Years % % Rs Lacs Rs Lacs	13 70% 30% 385 165
		Debt Component	Loan Amount Moratorium Period Repayment Period(incl Moratorium) Intrest Rate	Rs Lacs years years %	385.00 0 12 12.30%
		Equity Component	Equity amount Normative ROE (Post-tax) Return on Equity for first 10 years RoE Period Return on Equity 11th year onwards Weighted average of ROE Discount Rate	Rs Lacs % % p.a Year % p.a % %	165.00 16% 20% 10 24.00% 22.86% 10.62%
4	Financial Assumptions	Depreciation	Income Tax MAT Rate (for first 10 years) 80 IA benefits Depreciation Rate for first 12 years Depreciation Rate 13th year onwards Years for 5.83% rate	% % Yes/No % % %	32.45% 20.00% Yes 5.83% 0.87% 12
5	Working Capital	For Fixed Charges O&M Charges Maintenance Spare Receivables for Debtors Intrest On Working Capital	(% of O&M exepenses)	Months Months %	1 15% 2 12.80%
6	Operation & Maintenance	Power plant (FY 12-13) Total O & M Expenses Escalation		%	14.00 5.72%

Determination of Tariff Component:																																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Net Generation	MU		2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
O&M Expenses	Rs Lakh		14.00	14.80	15.65	16.54	17.49	18.49	19.55	20.66	21.85	23.10	24.42	25.81	27.29	28.85	30.50	32.25	34.09	36.04	38.10	40.28	42.59	45.02	47.60	50.32	53.20	56.24	59.46	62.86	66.46	70.26	74.28	78.52	83.02	87.76	92.78	
Depreciation	Rs Lakh		32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08	32.08
Interest on term loan	Rs Lakh		45.38	41.44	37.49	33.54	29.60	25.65	21.70	17.76	13.81	9.87	5.92	1.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Cap	Rs Lakh		3.14	3.10	3.05	3.02	2.98	2.95	2.91	2.89	2.86	2.84	2.97	2.96	2.40	2.48	2.56	2.65	2.75	2.85	2.96	3.07	3.20	3.32	3.46	3.60	3.75	3.91	4.08	4.26	4.44	4.64	4.85	5.08	5.31	5.56	5.82	
Return on Equity	Rs Lakh		33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	33.00	
Total Fixed Cost	Rs Lakh		127.61	124.42	121.27	118.18	115.15	112.17	109.25	106.39	103.60	100.89	104.99	102.43	74.07	75.71	77.45	79.28	81.22	83.28	85.45	87.74	90.16	92.73	95.44	98.30	101.33	104.53	107.92	111.50	115.28	119.28	123.51	127.98	132.71	137.71	142.99	
Levallised tariff corresponding to Useful life																																						
Per Unit Cost of Gen	Unit		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	
O&M expn	Rs/kWh	0.96	0.54	0.57	0.60	0.64	0.67	0.71	0.75	0.79	0.84	0.89	0.94	0.99	1.05	1.11	1.17	1.24	1.31	1.39	1.46	1.55	1.64	1.73	1.83	1.93	2.04	2.16	2.29	2.42	2.55	2.70	2.85	3.02	3.19	3.37	3.57	
Depreciation	Rs/kWh	0.94	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	1.23	
Int. on term loan	Rs/kWh	0.79	1.74	1.59	1.44	1.29	1.14	0.99	0.83	0.68	0.53	0.38	0.23	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh	0.12	0.12	0.12	0.12	0.12	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.11	0.12	0.12	0.13	0.13	0.14	0.14	0.15	0.16	0.16	0.17	0.18	0.19	0.20	0.20	0.21	0.22
RoE	Rs/kWh	1.36	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	1.27	
Total COG	Rs/kWh	4.16	4.90	4.78	4.66	4.54	4.43	4.31	4.20	4.09	3.98	3.88	4.04	3.94	2.85	2.91	2.98	3.05	3.12	3.20	3.28	3.37	3.47	3.56	3.67	3.78	3.89	4.02	4.15	4.29	4.43	4.58	4.75	4.92	5.10	5.29	5.50	
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089	0.080	0.073	0.066	0.059	0.054	0.048	0.044	0.040	0.036	0.032	
Levallised Tariff	4.16	Rs/Unit																																				

Determination of Accelerated Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20%
Income Tax (Normal Rates)	32.45%
Capital Cost	550.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	14.52	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	29.04	15.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	220.00	264.00	52.80	10.56	2.11	0.42	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	205.48	234.96	23.76	-18.48	-26.93	-28.62	-28.96	-29.02	-29.04	-29.04	-29.04	-29.04	-29.04	-29.04	-29.04	-29.04	-29.04	-15.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	66.67	76.23	7.71	-6.00	-8.74	-9.28	-9.39	-9.42	-9.42	-9.42	-9.42	-9.42	-9.42	-9.42	-9.42	-9.42	-9.42	-5.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	1.30	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60
Per unit benefit	Rs/Unit	5.12	2.93	0.30	-0.23	-0.34	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.36	-0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	0.09	0.08	0.08	0.07	0.06	0.06	0.05	0.05	0.04	0.04	

Tax Benefit Levelised 8.53

Electricity Generation (Levelised) 2.48

Levelised benefit 0.34 Rs/Unit

Select State

AP

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amout	Rs Lacs	133.50
			<u>Debt Component</u>	Loan Amount	Rs Lacs
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		<u>Equity Component</u>	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
	Discount Rate (equiv. to WACC)		10.62%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
	Years for 5.83% depreciation rate		12.00		
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15%
		Receivables for Debtors		Months	2
		<u>For Variable Charges</u>			
	Biomass Stock		Months	4	
	Interest On Working Capital		%	12.80%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	4000
			During Stablization Period	Kcal/kwh	4000
		<u>Biomass</u>	Base Price	Rs/T	2315
			GCV - Biomass	Kcal/kg	3300
	Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation		%	5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01		
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70		
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31		
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		159.78	206.48	216.81	227.65	239.03	250.98	263.53	276.70	290.54	305.07	320.32	336.34	353.15	370.81	389.35	408.82	429.26	450.72	473.26	496.92	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		13.65	16.71	17.39	18.11	18.87	19.67	20.52	21.41	22.35	23.34	24.51	25.61	26.48	27.78	29.14	30.57	32.07	33.65	35.31	37.05	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		127.03	128.27	127.21	126.27	125.46	124.78	124.24	123.86	123.64	123.58	129.15	129.46	116.43	120.40	124.59	129.01	133.68	138.60	143.79	149.27	
Levallised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levellised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.40		3.12	3.27	3.44	3.61	3.79	3.98	4.18	4.39	4.61	4.84	5.08	5.33	5.60	5.88	6.17	6.48	6.81	7.15	7.50	7.88
O&M expn	Rs/kWh	0.58		0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38		0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31		0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.34		0.27	0.26	0.28	0.29	0.30	0.31	0.33	0.34	0.35	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.51	0.53	0.56	0.59
RoE	Rs/kWh	0.46		0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	6.46		5.60	5.31	5.45	5.61	5.78	5.96	6.15	6.35	6.57	6.80	7.13	7.39	7.45	7.79	8.15	8.53	8.93	9.34	9.78	10.25
Levellised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost. (FY2012-13)		3.12	Rs/Kwh																				
Levellised Tariff. (Fixed)		2.06	Rs/Kwh																				
Applicable Tariff (FY2012-13)		5.18	Rs/Kwh																				

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levelled benefit 0.13 (Rs/kWh)

Select State

Harayana

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
			2	Project Cost	Capital Cost/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amout	Rs Lacs	133.50
		Debt Component	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Heat Rate	After Stabilisation period
During Stablization Period	Kcal/kwh				4000
Biomass	Base Price			Rs/T	2635
	GCV - Biomass			Kcal/kg	3300
	Biomass Price Escalation Factor				5.00%
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation	%		5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	
Variable Cost																							
Variable Cost		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biomass Cost	Rs Lakh		181.86	235.02	246.77	259.11	272.07	285.67	299.96	314.95	330.70	347.24	364.60	382.83	401.97	422.07	443.17	465.33	488.60	513.03	538.68	565.61	
Fixed Cost																							
Fixed Cost		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		15.10	18.58	19.35	20.17	21.03	21.94	22.90	23.91	24.98	26.10	27.40	28.65	29.68	31.13	32.66	34.26	35.95	37.72	39.58	41.54	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	
Total Fixed Cost	Rs Lakh		128.47	130.13	129.16	128.32	127.62	127.05	126.63	126.36	126.26	126.33	132.05	132.50	119.62	123.75	128.11	132.71	137.56	142.67	148.07	153.76	
Levallised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.01	3.55	3.73	3.91	4.11	4.31	4.53	4.76	4.99	5.24	5.51	5.78	6.07	6.37	6.69	7.03	7.38	7.75	8.13	8.54	8.97	
O&M expn	Rs/kWh	0.58	0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09	
Depreciation	Rs/kWh	0.38	0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	
Int. on term loan	Rs/kWh	0.31	0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh	0.38	0.29	0.29	0.31	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.57	0.60	0.63	0.66	
RoE	Rs/kWh	0.46	0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	
Total COG	Rs/kWh	7.11	6.06	5.79	5.96	6.14	6.34	6.54	6.76	7.00	7.25	7.51	7.87	8.17	8.27	8.65	9.06	9.48	9.93	10.40	10.89	11.41	
Levallised Tariff																							
Levallised Tariff		Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	
Variable Cost (FY2012-13)		3.55	Rs/Kwh																				
Levallised Tariff (Fixed)		2.10	Rs/Kwh																				
Applicable Tariff (FY2012-13)		5.65	Rs/Kwh																				

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00
Accelerated Depreciation																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	
Levellised benefit	0.13 (Rs/kWh)																					

Select State

Maharashtra

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amout	Rs Lacs	133.50
		Debt Component	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Heat Rate	After Stabilisation period
During Stablization Period	Kcal/kwh				4000
Biomass	Base Price			Rs/T	2695
	GCV - Biomass			Kcal/kg	3300
	Biomass Price Escalation Factor				5.00%
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation	%		5.72%

Determination of Tariff Component: Biomass Power Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biomass Cost	Rs Lakh		186.00	240.37	252.39	265.01	278.26	292.18	306.79	322.12	338.23	355.14	372.90	391.54	411.12	431.68	453.26	475.92	499.72	524.71	550.94	578.49
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		15.37	18.93	19.72	20.55	21.44	22.37	23.35	24.38	25.47	26.62	27.94	29.22	30.27	31.76	33.32	34.96	36.68	38.49	40.39	42.38
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04
Total Fixed Cost	Rs Lakh		128.74	130.48	129.53	128.71	128.02	127.47	127.07	126.83	126.75	126.85	132.59	133.07	120.22	124.38	128.77	133.40	138.28	143.44	148.87	154.60
Levillised tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.12	3.63	3.81	4.00	4.20	4.41	4.63	4.86	5.11	5.36	5.63	5.91	6.21	6.52	6.84	7.19	7.55	7.92	8.32	8.74	9.17
O&M expn	Rs/kWh	0.58	0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38	0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31	0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.39	0.30	0.30	0.31	0.33	0.34	0.35	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.61	0.64	0.67
RoE	Rs/kWh	0.46	0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	7.23	6.14	5.88	6.06	6.24	6.44	6.65	6.88	7.12	7.37	7.64	8.01	8.32	8.42	8.82	9.23	9.66	10.12	10.59	11.10	11.62
Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	3.63	Rs/Kwh																				
Levillised Tariff (Fixed)	2.11	Rs/Kwh																				
Applicable Tariff (FY2012-13)	5.74	Rs/Kwh																				

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Depn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levellised benefit	0.13	(Rs/kWh)
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Select State

Punjab

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amount	Rs Lacs	133.50
		Debt Component	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period(incl Moratorium)	years	12
			Interest Rate	%	12.30%
			Equity Component	Equity amount	Rs Lacs
		Return on Equity for first 10 years		% p.a	20.00%
		RoE Period		Year	10.00
		Return on Equity after 10 years			24.00%
		Weighted average of ROE			22.00%
Discount Rate (equiv. to WACC)		10.62%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Heat Rate	After Stabilisation period
During Stablization Period	Kcal/kwh				4000
Biomass	Base Price			Rs/T	2756
	GCV - Biomass			Kcal/kg	3300
	Biomass Price Escalation Factor				5.00%
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation	%		5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01		
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70		
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31		
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		190.21	245.82	258.11	271.01	284.56	298.79	313.73	329.42	345.89	363.18	381.34	400.41	420.43	441.45	463.52	486.70	511.03	536.58	563.41	591.58	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		15.64	19.28	20.09	20.95	21.85	22.80	23.80	24.86	25.97	27.14	28.50	29.80	30.88	32.40	33.99	35.66	37.42	39.26	41.20	43.24	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		129.02	130.84	129.91	129.10	128.43	127.91	127.53	127.31	127.25	127.38	133.14	133.65	120.83	125.02	129.44	134.11	139.02	144.21	149.69	155.46	
Levillised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.24		3.71	3.90	4.09	4.30	4.51	4.74	4.97	5.22	5.48	5.76	6.05	6.35	6.67	7.00	7.35	7.72	8.10	8.51	8.93	9.38
O&M expn	Rs/kWh	0.58		0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38		0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31		0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.40		0.31	0.31	0.32	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.57	0.59	0.62	0.65	0.69
RoE	Rs/kWh	0.46		0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	7.35		6.23	5.97	6.15	6.34	6.55	6.77	7.00	7.24	7.50	7.78	8.16	8.47	8.58	8.98	9.40	9.84	10.31	10.79	11.31	11.84
Levillised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)																							
Levillised Tariff (Fixed)																							
Applicable Tariff (FY2012-13)																							

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Depn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15
Levillised benefit	0.13 (Rs/kWh)																				

Select State

Rajasthan

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amout	Rs Lacs	133.50
		Debt Component	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period(inclد Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
			Receivables for Debtors	Months	2
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	12.80%
6	Fuel Related Assumptions	Heat Rate	After Stabilisation period	Kcal/kwh	4000
			During Stablization Period	Kcal/kwh	4000
		Biomass	Base Price	Rs/T	2300
			GCV - Biomass	Kcal/kg	3300
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation		%	5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		158.74	205.14	215.40	226.17	237.48	249.35	261.82	274.91	288.66	303.09	318.24	334.16	350.86	368.41	386.83	406.17	426.48	447.80	470.19	493.70	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		13.58	16.62	17.30	18.01	18.77	19.56	20.41	21.29	22.23	23.21	24.37	25.47	26.33	27.62	28.97	30.39	31.89	33.46	35.11	36.84	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		126.96	128.18	127.11	126.17	125.35	124.67	124.13	123.74	123.51	123.45	129.02	129.31	116.28	120.25	124.43	128.84	133.50	138.41	143.59	149.06	
Levillised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levellised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.37		3.10	3.25	3.42	3.59	3.77	3.95	4.15	4.36	4.58	4.81	5.05	5.30	5.56	5.84	6.13	6.44	6.76	7.10	7.45	7.83
O&M expn	Rs/kWh	0.58		0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38		0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31		0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.34		0.27	0.26	0.27	0.29	0.30	0.31	0.32	0.34	0.35	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.51	0.53	0.56	0.58
RoE	Rs/kWh	0.46		0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	6.43		5.58	5.28	5.43	5.59	5.75	5.93	6.12	6.32	6.53	6.76	7.09	7.35	7.41	7.75	8.11	8.48	8.88	9.29	9.73	10.19
Levillised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)			3.10	Rs/Kwh																			
Levillised Tariff (Fixed)			2.06	Rs/Kwh																			
Applicable Tariff (FY2012-13)			5.16	Rs/Kwh																			

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00
Accelerated Depreciation																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	
Levellised benefit	0.13 (Rs/kWh)																					

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Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF (Stablization for 6 months)	%	60%
			PLF (during first year after Stablization)	%	70%
			PLF (second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amount	Rs Lacs	133.50
		<u>Debt Component</u>	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period (incl'd Moratorium)	years	12
			Interest Rate	%	12.30%
		<u>Equity Component</u>	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.00%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate (power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15%
		Receivables for Debtors		Months	2
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
		Interest On Working Capital		%	12.80%
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	4000
			During Stablization Period	Kcal/kwh	4000
		<u>Biomass</u>	Base Price	Rs/T	2277
			GCV - Biomass	Kcal/kg	3300
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			24.00
		<u>Total O & M Expenses Escalation</u>		%	5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		157.15	203.09	213.25	223.91	235.10	246.86	259.20	272.16	285.77	300.06	315.06	330.82	347.36	364.72	382.96	402.11	422.21	443.32	465.49	488.76	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		13.48	16.49	17.16	17.87	18.61	19.40	20.23	21.11	22.04	23.02	24.16	25.25	26.10	27.38	28.72	30.13	31.61	33.16	34.80	36.52	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		126.86	128.04	126.97	126.02	125.20	124.51	123.96	123.56	123.32	123.25	128.81	129.10	116.05	120.00	124.17	128.57	133.22	138.11	143.28	148.74	
Levillised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levellised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.33		3.07	3.22	3.38	3.55	3.73	3.91	4.11	4.32	4.53	4.76	5.00	5.25	5.51	5.78	6.07	6.38	6.69	7.03	7.38	7.75
O&M expn	Rs/kWh	0.58		0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38		0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31		0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.34		0.26	0.26	0.27	0.28	0.30	0.31	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.46	0.48	0.50	0.53	0.55	0.58
RoE	Rs/kWh	0.46		0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	6.39		5.54	5.25	5.39	5.55	5.71	5.89	6.08	6.27	6.49	6.71	7.04	7.29	7.35	7.69	8.04	8.41	8.81	9.22	9.65	10.11
Levillised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)			3.07	Rs/Kwh																			
Levillised Tariff (Fixed)			2.06	Rs/Kwh																			
Applicable Tariff (FY2012-13)			5.12	Rs/Kwh																			

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levelled benefit **0.13** (Rs/kWh)

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Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
			Total Equity Amout	Rs Lacs	133.50
		<u>Debt Component</u>	Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		<u>Equity Component</u>	Equity amount	Rs Lacs	133.50
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15%
		Receivables for Debtors		Months	2
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
		Interest On Working Capital		%	12.80%
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	4000
			During Stablization Period	Kcal/kwh	4000
		<u>Biomass</u>	Base Price	Rs/T	2355
			GCV - Biomass	Kcal/kg	3300
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			24.00
		<u>Total O & M Expenses Escalation</u>		%	5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		162.54	210.05	220.55	231.58	243.16	255.32	268.08	281.49	295.56	310.34	325.85	342.15	359.25	377.22	396.08	415.88	436.68	458.51	481.44	505.51	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		13.83	16.94	17.64	18.37	19.14	19.95	20.81	21.72	22.68	23.69	24.87	25.99	26.88	28.20	29.58	31.03	32.55	34.16	35.84	37.61	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		127.21	128.50	127.45	126.52	125.73	125.06	124.54	124.17	123.96	123.92	129.51	129.84	116.83	120.82	125.03	129.47	134.16	139.11	144.33	149.83	
Levillised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levellised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.48		3.17	3.33	3.50	3.67	3.86	4.05	4.25	4.46	4.69	4.92	5.17	5.42	5.70	5.98	6.28	6.59	6.92	7.27	7.63	8.01
O&M expn	Rs/kWh	0.58		0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh	0.38		0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.31		0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.35		0.27	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.57	0.60
RoE	Rs/kWh	0.46		0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh	6.54		5.65	5.37	5.52	5.68	5.85	6.03	6.23	6.43	6.65	6.89	7.22	7.48	7.55	7.90	8.26	8.65	9.05	9.48	9.92	10.39
Levillised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)			3.17	Rs/Kwh																			
Levillised Tariff (Fixed)			2.07	Rs/Kwh																			
Applicable Tariff (FY2012-13)			5.24	Rs/Kwh																			

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levellised benefit **0.13 (Rs/kWh)**

Select State

Others

Assumption for Biomass Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	70%
			PLF(second year onwards)	%	80%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	445.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	311.50
		Debt Component	Total Equity Amout	Rs Lacs	133.50
			Loan Amount	Rs Lacs	311.50
			Moratorium Period	years	0
		Equity Component	Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
			Equity amount	Rs Lacs	133.50
		Return on Equity for first 10 years	% p.a	20.00%	
		RoE Period	Year	10.00	
		Return on Equity after 10 years		24.00%	
		Weighted average of ROE		22.00%	
Discount Rate (equiv. to WACC)		10.62%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
Years for 5.83% depreciation rate		12.00			
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors	Months	2	
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	12.80%
6	Fuel Related Assumptions	Heat Rate	After Stabilisation period	Kcal/kwh	4000
			During Stablization Period	Kcal/kwh	4000
		Biomass	Base Price	Rs/T	2476
			GCV - Biomass	Kcal/kg	3300
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			24.00
		Total O & M Expenses Escalation	%		5.72%

Determination of Tariff Component: Biomass Power Projects																							
Units Generation		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		
Gross Generation	MU		5.69	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01		
Auxiliary Consumption	MU		0.57	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70		
Net Generation	MU		5.12	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31		
Vaible Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Biomass Cost	Rs Lakh		170.90	220.85	231.89	243.49	255.66	268.45	281.87	295.96	310.76	326.30	342.61	359.75	377.73	396.62	416.45	437.27	459.14	482.09	506.20	531.51	
Fixed Cost		Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
O&M Expenses	Rs Lakh		24.00	25.37	26.82	28.36	29.98	31.70	33.51	35.43	37.45	39.59	41.86	44.25	46.78	49.46	52.29	55.28	58.44	61.78	65.32	69.06	
Depreciation	Rs Lakh		25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	25.96	11.13	11.13	11.13	11.13	11.13	11.13	11.13	11.13	
Interest on term loan	Rs Lakh		36.72	33.53	30.33	27.14	23.95	20.75	17.56	14.37	11.18	7.98	4.79	1.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		14.38	17.65	18.38	19.15	19.96	20.81	21.72	22.67	23.67	24.73	25.96	27.14	28.09	29.47	30.91	32.43	34.02	35.70	37.46	39.31	
Return on Equity	Rs Lakh		26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	26.70	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	32.04	
Total Fixed Cost	Rs Lakh		127.76	129.21	128.19	127.30	126.54	125.92	125.44	125.12	124.96	124.97	130.61	130.99	118.04	122.09	126.36	130.87	135.63	140.65	145.95	151.53	
Levillised tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levellised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh		4.71	3.33	3.50	3.68	3.86	4.05	4.26	4.47	4.69	4.93	5.17	5.43	5.70	5.99	6.29	6.60	6.93	7.28	7.64	8.03	8.43
O&M expn	Rs/kWh		0.58	0.47	0.40	0.43	0.45	0.48	0.50	0.53	0.56	0.59	0.63	0.66	0.70	0.74	0.78	0.83	0.88	0.93	0.98	1.04	1.09
Depreciation	Rs/kWh		0.38	0.51	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh		0.31	0.72	0.53	0.48	0.43	0.38	0.33	0.28	0.23	0.18	0.13	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh		0.36	0.28	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.57	0.59	0.62
RoE	Rs/kWh		0.46	0.52	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
Total COG	Rs/kWh		6.79	5.83	5.55	5.71	5.88	6.06	6.25	6.46	6.68	6.91	7.15	7.50	7.78	7.86	8.22	8.61	9.01	9.43	9.87	10.34	10.83
Levillised Tariff		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor				1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)		3.33	Rs/Kwh																				
Levillised Tariff (Fixed)		2.08	Rs/Kwh																				
Applicable Tariff (FY2012-13)		5.42	Rs/Kwh																				

Determination of Accelerated Depreciation for Biomass Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	445.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.75	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	23.50	12.82	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelrated Deprn.	Rs Lakh	178.00	213.60	42.72	8.54	1.71	0.34	0.07	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	166.25	190.10	19.22	-14.95	-21.79	-23.15	-23.43	-23.48	-23.49	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-23.50	-12.82	0.00	0.00
Tax Benefit	Rs Lakh	53.94	61.68	6.24	-4.85	-7.07	-7.51	-7.60	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-7.62	-4.16	0.00	0.00
Net Energy generation	MU	2.56	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	2.11	0.98	0.10	-0.08	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit 0.13 (Rs/kWh)

Select State

AP

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	%	45%
			PLF(during first year after Stablization)	%	45%
			PLF(second year onwards)	%	45%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
			Total Equity Amount	Rs Lacs	126.00
		Debt Component	Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
			Equity Component	Equity amount	Rs Lacs
		Return on Equity for first 10 years		% p.a	20.00%
		RoE Period		Year	10.00
		Return on Equity after 10 years			24.00%
		Weighted average of ROE			22.00%
		Discount Rate (equiv. to WACC)		10.62%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Heat Rate	After Stabilisation period
During Stablization Period	Kcal/kwh				3600
Biomass	Base Price			Rs/T	1307
	GCV - Bagasse			Kcal/kg	2250
	Bagasse Price Escalation Factor				5.00%
7	Operation & Maintenance	power plant (FY 2012-13)	Rs. Lacs	16.00	
		Total O & M Expenses Escalation	%	5.72%	

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	
Auxiliary Consumption	MU		0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	
Net Generation	MU		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		8.07	8.32	8.59	8.87	9.17	9.50	9.84	10.20	10.58	10.99	11.53	11.99	12.20	12.78	13.39	14.02	14.69	15.40	16.14	16.92
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		108.42	106.58	104.80	103.09	101.46	99.91	98.45	97.08	95.80	94.62	93.70	92.74	91.83	90.99	90.22	89.51	88.86	88.27	87.73	87.24
Levelling tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levelling	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	3.23	2.29	2.40	2.52	2.65	2.78	2.92	3.06	3.22	3.38	3.55	3.72	3.91	4.10	4.31	4.53	4.75	4.99	5.24	5.50	5.78
O&M expn	Rs/kWh	0.66	0.44	0.47	0.50	0.52	0.55	0.59	0.62	0.65	0.69	0.73	0.77	0.82	0.86	0.91	0.97	1.02	1.08	1.14	1.21	1.28
Depreciation	Rs/kWh	0.61	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Int. on term loan	Rs/kWh	0.49	0.96	0.88	0.79	0.71	0.63	0.54	0.46	0.38	0.29	0.21	0.13	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.29	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.35	0.37	0.39	0.41	0.43	0.45	0.47	0.47
RoE	Rs/kWh	0.74	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Total COG	Rs/kWh	6.00	5.29	5.35	5.43	5.50	5.59	5.69	5.79	5.91	6.03	6.17	6.46	6.62	6.44	6.71	6.99	7.29	7.61	7.94	8.28	8.65
Levelling Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	2.29	Rs/Kwh																				
Levelling Tariff (Fixed)	2.77	Rs/Kwh																				
Applicable Tariff (FY2012-13)	5.06	Rs/Kwh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	420.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation	MU	1.80	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Per unit benefit	Rs/Unit	2.82	1.61	0.16	-0.13	-0.18	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.11	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levellised benefit **0.21** **(Rs/kWh)**

Select State

Hararyana

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	%	53%
			PLF(during first year after Stablization)	%	53%
			PLF(second year onwards)	%	53%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
		<u>Debt Component</u>	Total Equity Amout	Rs Lacs	126.00
			Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
		<u>Equity Component</u>	Interest Rate	%	12.30%
			Equity amount	Rs Lacs	126.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
	Discount Rate (equiv. to WACC)		10.62%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
	Years for 5.83% depreciation rate		12.00		
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1
			Maintenance Spare	(% of O&M expenses)	15%
			Receivables for Debtors	Months	2
			<u>For Variable Charges</u>		
			Biomass Stock	Months	4
	Interest On Working Capital	%	12.80%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	3600
			During Stablization Period	Kcal/kwh	3600
		<u>Biomass</u>	Base Price	Rs/T	1859
			GCV - Bagasse	Kcal/kg	2250
			Bagasse Price Escalation Factor		5.00%
7	Operation & Maintenance		power plant (FY 2012-13)	Rs. Lacs	16.00
			<u>Total O & M Expenses Escalation</u>	%	5.72%

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64
Auxiliary Consumption	MU		0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		11.71	12.14	12.60	13.09	13.60	14.14	14.72	15.32	15.96	16.64	17.46	18.22	18.74	19.64	20.59	21.59	22.64	23.74	24.90	26.12
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		112.06	110.40	108.81	107.31	105.89	104.56	103.33	102.20	101.18	100.27	104.63	103.96	90.67	93.36	96.19	99.18	102.34	105.67	109.19	112.89
Levelling tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levelling	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.59	3.25	3.41	3.58	3.76	3.95	4.15	4.36	4.57	4.80	5.04	5.30	5.56	5.84	6.13	6.44	6.76	7.10	7.45	7.82	8.21
O&M expn	Rs/kWh	0.56	0.38	0.40	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.62	0.66	0.69	0.73	0.78	0.82	0.87	0.92	0.97	1.03	1.08
Depreciation	Rs/kWh	0.51	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Int. on term loan	Rs/kWh	0.41	0.82	0.74	0.67	0.60	0.53	0.46	0.39	0.32	0.25	0.18	0.11	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.36	0.28	0.29	0.30	0.31	0.32	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.44	0.46	0.48	0.51	0.53	0.56	0.59	0.61
RoE	Rs/kWh	0.62	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Total COG	Rs/kWh	7.06	5.89	6.01	6.15	6.29	6.44	6.61	6.79	6.98	7.18	7.40	7.76	8.01	7.97	8.33	8.70	9.09	9.50	9.94	10.39	10.87
Levelling Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	3.25	Rs/kWh																				
Levelling Tariff (Fixed)	2.48	Rs/kWh																				
Applicable Tariff (FY2012-13)	5.73	Rs/kWh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.0000%
Income Tax (Normal Rates)	32.4450%
Capital Cost	420.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelrated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00	
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00	
Net Energy generation	MU	2.12	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	
Per unit benefit	Rs/Unit	2.40	1.37	0.14	-0.11	-0.16	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.09	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit **0.18** **(Rs/kWh)**

Select State

Maharashtra

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	%	60%
			PLF(during first year after Stablization)	%	60%
			PLF(second year onwards)	%	60%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
			Total Equity Amout	Rs Lacs	126.00
		Debt Component	Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	126.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
Return on Equity after 10 years			24.00%		
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Heat Rate	After Stabilisation period
During Stablization Period	Kcal/kwh				3600
Biomass	Base Price			Rs/T	1832
	GCV - Bagasse			Kcal/kg	2250
	Bagasse Price Escalation Factor				5.00%
7	Operation & Maintenance		power plant (FY 2012-13)	Rs. Lacs	16.00
			Total O & M Expenses Escalation	%	5.72%

Determination of Tariff for non-fossil fuel based co-generation Projects																							
Units Generation		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	
Auxiliary Consumption	MU		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	
Net Generation	MU		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	
Fixed Cost		Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04	
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Interest on working Capital	Rs Lakh		12.75	13.24	13.75	14.29	14.87	15.47	16.11	16.79	17.50	18.26	19.16	20.00	20.61	21.61	22.66	23.76	24.92	26.14	27.41	28.76	
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	
Total Fixed Cost	Rs Lakh		113.11	111.49	109.96	108.51	107.16	105.89	104.73	103.67	102.72	101.89	106.33	105.75	92.54	95.32	98.26	101.35	104.62	108.07	111.70	115.53	
Levelling tariff corresponding to Useful life																							
Per Unit Cost of Generation		Unit	Levelling	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.52	3.20	3.36	3.53	3.71	3.89	4.09	4.29	4.51	4.73	4.97	5.22	5.48	5.75	6.04	6.34	6.66	6.99	7.34	7.71	8.10	
O&M expn	Rs/kWh	0.50	0.33	0.35	0.37	0.39	0.42	0.44	0.46	0.49	0.52	0.55	0.58	0.61	0.65	0.69	0.72	0.77	0.81	0.86	0.91	0.96	
Depreciation	Rs/kWh	0.45	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
Int. on term loan	Rs/kWh	0.36	0.72	0.66	0.60	0.53	0.47	0.41	0.34	0.28	0.22	0.16	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital	Rs/kWh	0.35	0.27	0.28	0.29	0.30	0.31	0.32	0.34	0.35	0.36	0.38	0.40	0.42	0.43	0.45	0.47	0.49	0.52	0.54	0.57	0.60	
RoE	Rs/kWh	0.55	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	
Total COG	Rs/kWh	6.74	5.56	5.68	5.82	5.96	6.12	6.29	6.47	6.66	6.87	7.09	7.43	7.68	7.68	8.02	8.39	8.77	9.17	9.59	10.03	10.50	
Levelling Tariff		Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	
Variable Cost (FY2012-13)	3.20	Rs/Kwh																					
Levelling Tariff (Fixed)	2.22	Rs/Kwh																					
Applicable Tariff (FY2012-13)	5.42	Rs/Kwh																					

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project																					
Depreciation amount	90%																				
Book Depreciation rate	5.28%																				
Tax Depreciation rate	80%																				
Income Tax (MAT)	20.0000%																				
Income Tax (Normal Rates)	32.4450%																				
Capital Cost	420.0																				
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation	MU	2.40	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
Per unit benefit	Rs/Unit	2.12	1.21	0.12	-0.10	-0.14	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.08	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15
Levellised benefit	0.16 (Rs/kWh)																				

Select State

Punjab

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	%	53%
			PLF(during first year after Stablization)	%	53%
			PLF(second year onwards)	%	53%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
			Total Equity Amout	Rs Lacs	126.00
		<u>Debt Component</u>	Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		<u>Equity Component</u>	Equity amount	Rs Lacs	126.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
	Discount Rate (equiv. to WACC)		10.62%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
	Years for 5.83% depreciation rate		12.00		
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors	Months	2	
		<u>For Variable Charges</u>	Biomass Stock	Months	4
			Interest On Working Capital	%	12.80%
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	3600
			During Stablization Period	Kcal/kwh	3600
		<u>Biomass</u>	Base Price	Rs/T	1636
			GCV - Bagasse	Kcal/kg	2250
			Bagasse Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant (FY 2012-13)	Rs. Lacs	16.00	
		Total O & M Expenses Escalation	%	5.72%	

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64
Auxiliary Consumption	MU		0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.62	11.00	11.41	11.83	12.28	12.76	13.26	13.80	14.36	14.96	15.70	16.36	16.79	17.60	18.45	19.34	20.27	21.26	22.29	23.38
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		110.98	109.26	107.62	106.05	104.57	103.18	101.88	100.67	99.58	98.59	102.86	102.11	88.72	91.31	94.05	96.93	99.98	103.19	106.58	110.16
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.04	2.86	3.00	3.15	3.31	3.48	3.65	3.83	4.03	4.23	4.44	4.66	4.89	5.14	5.39	5.66	5.95	6.24	6.56	6.88	7.23
O&M expn	Rs/kWh	0.56	0.38	0.40	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.62	0.66	0.69	0.73	0.78	0.82	0.87	0.92	0.97	1.03	1.08
Depreciation	Rs/kWh	0.51	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Int. on term loan	Rs/kWh	0.41	0.82	0.74	0.67	0.60	0.53	0.46	0.39	0.32	0.25	0.18	0.11	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.33	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.34	0.35	0.37	0.39	0.40	0.41	0.43	0.46	0.48	0.50	0.52	0.55
RoE	Rs/kWh	0.62	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Total COG	Rs/kWh	6.48	5.47	5.58	5.69	5.81	5.94	6.08	6.23	6.40	6.57	6.76	7.08	7.30	7.23	7.54	7.88	8.23	8.60	8.99	9.39	9.82
Levallised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	2.86	Rs/Kwh																				
Levallised Tariff (Fixed)	2.44	Rs/Kwh																				
Applicable Tariff (FY2012-13)	5.30	Rs/Kwh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project																						
Depreciation amount		90%																				
Book Depreciation rate		5.28%																				
Tax Depreciation rate		80%																				
Income Tax (MAT)		20.0000%																				
Income Tax (Normal Rates)		32.4450%																				
Capital Cost		420.0																				
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00
Accelerated Depreciation																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelrated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation	MU	2.12	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit	2.40	1.37	0.14	-0.11	-0.16	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.09	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	
Levellised benefit	0.18	(Rs/kWh)																				

Select State

TN

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxillary Consumption during stabilisation	%	8.50%	
			Auxillary Consumption after stabilisation	%	8.50%	
			PLF(Stabilization for 6 months)	%	60%	
			PLF(during first year after Stabilization)	%	60%	
			PLF(second year onwards)	%	60%	
			Useful Life	Years	20	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lacs	294.00	
			Total Equity Amount	Rs Lacs	126.00	
			<u>Debt Component</u>	Loan Amount	Rs Lacs	294.00
				Moratorium Period	years	0
				Repayment Period(incl. Moratorium)	years	12
				Interest Rate	%	12.30%
				<u>Equity Component</u>	Equity amount	Rs Lacs
			Return on Equity for first 10 years		% p.a	20.00%
			RoE Period		Year	10.00
			Return on Equity after 10 years			24.00%
			Weighted average of ROE			22.00%
Discount Rate (equiv. to WACC)		10.62%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.4450%	
			MAT Rate (for first 10 years)	%	20%	
			80 IA benefits	Yes/No	Yes	
			<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
				Depreciation Rate 13th year onwards	%	2.50%
Years for 5.83% depreciation rate		12.00				
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)	15%	
			Receivables for Debtors	Months	2	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
Interest On Working Capital	%	12.80%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	3600	
			During Stabilization Period	Kcal/kwh	3600	
			<u>Biomass</u>	Base Price	Rs/T	1408
				GCV - Bagasse	Kcal/kg	2250
				Bagasse Price Escalation Factor		5.00%
7	Operation & Maintenance		power plant (FY 2012-13)	Rs. Lacs	16.00	
			Total O & M Expenses Escalation	%	5.72%	

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26	5.26
Auxiliary Consumption	MU		0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
Net Generation	MU		4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.42	10.79	11.18	11.59	12.03	12.50	12.99	13.51	14.06	14.64	15.36	16.01	16.43	17.21	18.04	18.91	19.83	20.79	21.80	22.86
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		110.77	109.05	107.39	105.81	104.32	102.92	101.60	100.39	99.27	98.27	102.53	101.76	88.35	90.93	93.64	96.51	99.53	102.72	106.09	109.64
Levillised tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	3.47	2.46	2.59	2.71	2.85	2.99	3.14	3.30	3.46	3.64	3.82	4.01	4.21	4.42	4.64	4.87	5.12	5.37	5.64	5.93	6.22
O&M expn	Rs/kWh	0.50	0.33	0.35	0.37	0.39	0.42	0.44	0.46	0.49	0.52	0.55	0.58	0.61	0.65	0.69	0.72	0.77	0.81	0.86	0.91	0.96
Depreciation	Rs/kWh	0.45	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22
Int. on term loan	Rs/kWh	0.36	0.72	0.66	0.60	0.53	0.47	0.41	0.34	0.28	0.22	0.16	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.28	0.22	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.48
RoE	Rs/kWh	0.55	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
Total COG	Rs/kWh	5.62	4.77	4.85	4.95	5.05	5.16	5.28	5.41	5.55	5.70	5.86	6.14	6.33	6.26	6.53	6.82	7.13	7.44	7.78	8.13	8.50
Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	2.46	Rs/Kwh																				
Levillised Tariff (Fixed)	2.15	Rs/Kwh																				
Applicable Tariff (FY2012-13)	4.61	Rs/Kwh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project																						
Depreciation amount		90%																				
Book Depreciation rate		5.28%																				
Tax Depreciation rate		80%																				
Income Tax (MAT)		20.0000%																				
Income Tax (Normal Rates)		32.4450%																				
Capital Cost		420.0																				
Years	----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation		%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation		Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00
Accelerated Depreciation																						
Opening		%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year		%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing		%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.		Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit		Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit		Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation		MU	2.40	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81	4.81
Per unit benefit		Rs/Unit	2.12	1.21	0.12	-0.10	-0.14	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.15	-0.08	0.00	0.00
Discounting Factor			1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15
Levellised benefit		0.16	(Rs/kWh)																			

Select State

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Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	%	45%
			PLF(during first year after Stablization)	%	45%
			PLF(second year onwards)	%	45%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
			Total Equity Amount	Rs Lacs	126.00
		<u>Debt Component</u>	Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
			<u>Equity Component</u>	Equity amount	Rs Lacs
		Return on Equity for first 10 years		% p.a	20.00%
		RoE Period		Year	10.00
		Return on Equity after 10 years			24.00%
				Weighted average of ROE	
		Discount Rate (equiv. to WACC)			10.62%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors	Months	2	
		<u>For Variable Charges</u>	Biomass Stock	Months	4
			Interest On Working Capital	%	12.80%
6	Fuel Related Assumptions	<u>Heat Rate</u>	After Stabilisation period	Kcal/kwh	3600
			During Stablization Period	Kcal/kwh	3600
		<u>Biomass</u>	Base Price	Rs/T	1458
			GCV - Bagasse	Kcal/kg	2250
			Bagasse Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant (FY 2012-13)	Rs. Lacs	16.00	
		Total O & M Expenses Escalation	%	5.72%	

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Gross Generation	MU		3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	3.94	
Auxiliary Consumption	MU		0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	0.34	
Net Generation	MU		3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		8.69	8.97	9.27	9.59	9.93	10.29	10.67	11.08	11.50	11.96	12.55	13.05	13.32	13.95	14.62	15.32	16.05	16.83	17.64	18.49
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		109.04	107.23	105.48	103.81	102.22	100.71	99.29	97.95	96.72	95.59	99.71	98.80	85.25	87.67	90.22	92.91	95.75	98.76	101.92	105.27
Levelling tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levelling	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	3.60	2.55	2.68	2.81	2.95	3.10	3.25	3.42	3.59	3.77	3.96	4.15	4.36	4.58	4.81	5.05	5.30	5.57	5.84	6.14	6.44
O&M expn	Rs/kWh	0.66	0.44	0.47	0.50	0.52	0.55	0.59	0.62	0.65	0.69	0.73	0.77	0.82	0.86	0.91	0.97	1.02	1.08	1.14	1.21	1.28
Depreciation	Rs/kWh	0.61	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.68	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Int. on term loan	Rs/kWh	0.49	0.96	0.88	0.79	0.71	0.63	0.54	0.46	0.38	0.29	0.21	0.13	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.31	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.31	0.32	0.33	0.35	0.36	0.37	0.39	0.41	0.42	0.45	0.47	0.49	0.51
RoE	Rs/kWh	0.74	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Total COG	Rs/kWh	6.39	5.57	5.65	5.74	5.83	5.93	6.05	6.17	6.30	6.45	6.61	6.92	7.10	6.94	7.24	7.55	7.88	8.22	8.58	8.96	9.36
Levelling Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	2.55	Rs/Kwh																				
Levelling Tariff (Fixed)	2.80	Rs/Kwh																				
Applicable Tariff (FY2012-13)	5.35	Rs/Kwh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project																					
Depreciation amount		90%																			
Book Depreciation rate		5.28%																			
Tax Depreciation rate		80%																			
Income Tax (MAT)		20.0000%																			
Income Tax (Normal Rates)		32.4450%																			
Capital Cost		420.0																			
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelrated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation	MU	1.80	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61	3.61
Per unit benefit	Rs/Unit	2.82	1.61	0.16	-0.13	-0.18	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.11	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15
Levellised benefit	0.21	(Rs/kWh)																			

Select State

Others

Non Fossil Fuel based co-generation Projects

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	8.50%
			Auxillary Consumption after stabilisation	%	8.50%
			PLF(Stabilization for 6 months)	%	53%
			PLF(during first year after Stabilization)	%	53%
			PLF(second year onwards)	%	53%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	420.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	294.00
			Total Equity Amount	Rs Lacs	126.00
		Debt Component	Loan Amount	Rs Lacs	294.00
			Moratorium Period	years	0
			Repayment Period(incl'd Moratorium)	years	12
			Interest Rate	%	12.30%
			Equity Component	Equity amount	Rs Lacs
		Return on Equity for first 10 years		% p.a	20.00%
		RoE Period		Year	10.00
		Return on Equity after 10 years			24.00%
		Weighted average of ROE			22.00%
		Discount Rate (equiv. to WACC)		10.62%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.4450%
			MAT Rate (for first 10 years)	%	20%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
Years for 5.83% depreciation rate		12.00			
5	Working Capital	For Fixed Charges O&M Charges Maintenance Spare Receivables for Debtors For Variable Charges Biomass Stock Interest On Working Capital	(% of O&M exepenses)		
				Months	1
				Months	15%
				Months	2
				Months	4
	%	12.80%			
6	Fuel Related Assumptions	Heat Rate	After Stabilisation period	Kcal/kwh	3600
			During Stabilization Period	Kcal/kwh	3600
		Biomass	Base Price	Rs/T	1583
			GCV - Bagasse	Kcal/kg	2250
Bagasse Price Escalation Factor		5.00%			
7	Operation & Maintenance	power plant (FY 2012-13) Total O & M Expenses Escalation		Rs. Lacs	16.00
				%	5.72%

Determination of Tariff for non-fossil fuel based co-generation Projects																						
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64	4.64
Auxiliary Consumption	MU		0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
Net Generation	MU		4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		16.00	16.92	17.88	18.91	19.99	21.13	22.34	23.62	24.97	26.40	27.91	29.50	31.19	32.97	34.86	36.85	38.96	41.19	43.55	46.04
Depreciation	Rs Lakh		24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	24.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50
Interest on term loan	Rs Lakh		34.66	31.64	28.63	25.61	22.60	19.59	16.57	13.56	10.55	7.53	4.52	1.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		10.37	10.73	11.12	11.53	11.97	12.43	12.92	13.44	13.98	14.56	15.28	15.92	16.33	17.11	17.94	18.80	19.71	20.67	21.67	22.73
Return on Equity	Rs Lakh		25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	25.20	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24	30.24
Total Fixed Cost	Rs Lakh		110.72	108.99	107.33	105.75	104.26	102.85	101.53	100.31	99.20	98.19	102.44	101.67	88.26	90.83	93.54	96.40	99.41	102.60	105.96	109.51
Levillised tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	3.91	2.77	2.91	3.05	3.20	3.36	3.53	3.71	3.89	4.09	4.29	4.51	4.73	4.97	5.22	5.48	5.75	6.04	6.34	6.66	6.99
O&M expn	Rs/kWh	0.56	0.38	0.40	0.42	0.45	0.47	0.50	0.53	0.56	0.59	0.62	0.66	0.69	0.73	0.78	0.82	0.87	0.92	0.97	1.03	1.08
Depreciation	Rs/kWh	0.51	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Int. on term loan	Rs/kWh	0.41	0.82	0.74	0.67	0.60	0.53	0.46	0.39	0.32	0.25	0.18	0.11	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.32	0.24	0.25	0.26	0.27	0.28	0.29	0.30	0.32	0.33	0.34	0.36	0.37	0.38	0.40	0.42	0.44	0.46	0.49	0.51	0.54
RoE	Rs/kWh	0.62	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.59	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
Total COG	Rs/kWh	6.34	5.37	5.47	5.58	5.69	5.82	5.95	6.10	6.26	6.42	6.61	6.92	7.13	7.05	7.36	7.68	8.02	8.38	8.76	9.16	9.57
Levillised Tariff	Unit	Year ->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	2.77	Rs/Kwh																				
Levillised Tariff (Fixed)	2.43	Rs/Kwh																				
Applicable Tariff (FY2012-13)	5.20	Rs/Kwh																				

Determination of Accelerated Depreciation for non-fossil fuel based co-generation project																					
Depreciation amount		90%																			
Book Depreciation rate		5.28%																			
Tax Depreciation rate		80%																			
Income Tax (MAT)		20.0000%																			
Income Tax (Normal Rates)		32.4450%																			
Capital Cost		420.0																			
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	11.09	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	22.18	12.10	0.00	0.00
Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	168.00	201.60	40.32	8.06	1.61	0.32	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	156.91	179.42	18.14	-14.11	-20.56	-21.85	-22.11	-22.16	-22.17	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-22.18	-12.10	0.00	0.00
Tax Benefit	Rs Lakh	50.91	58.21	5.89	-4.58	-6.67	-7.09	-7.17	-7.19	-7.19	-7.19	-7.19	-7.19	-7.20	-7.20	-7.20	-7.20	-7.20	-3.92	0.00	0.00
Net Energy generation	MU	2.12	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit	2.40	1.37	0.14	-0.11	-0.16	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.17	-0.09	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15
Levellised benefit	0.18	(Rs/kWh)																			

Assumption for Solar PV Power Projects Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	19.0%
			Auxiliary Consumption	%	0.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	1000
3	Financial Assumptions		Tariff Period	Years	25
			<u>Debt: Equity</u>		
			Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	700.00
			Total Equity Amount	Rs Lacs	300.00
			<u>Debt Component</u>		
			Loan Amount	Rs Lacs	700.00
			Moratorium Period	years	0
			Repayment Period(incl'd Moratorium)	years	12
			Interest Rate	%	12.30%
			<u>Equity Component</u>		
			Equity amount	Rs Lacs	300.00
Return on Equity for first 10 years	% p.a	20.00%			
RoE Period	Year	10			
Return on Equity 11th year onwards	% p.a	24.00%			
Weighted average of ROE		22.40%			
Discount Rate		10.62%			
4	Financial Assumptions		<u>Fiscal Assumptions</u>		
			Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.000%
			80 IA benefits	Yes/No	Yes
			<u>Depreciation</u>		
Depreciation Rate for first 12 years	%	5.83%			
Depreciation Rate 13th year onwards	%	1.54%			
Years for 5.83% rate		12			
5	Working Capital		<u>For Fixed Charges</u>		
			O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
			Receivables for Debtors	Months	2
			<u>For Variable Charges</u>		
Interest On Working Capital	%	12.80%			
6	Operation & Maintenance		power plant (FY 12-13)	Rs. Lacs	11.00
			Total O & M Expenses Escalation	%	5.72%

Determination of Tariff for Solar PV																											
Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		11.00	11.63	12.29	13.00	13.74	14.53	15.36	16.24	17.17	18.15	19.19	20.28	21.44	22.67	23.97	25.34	26.79	28.32	29.94	31.65	33.46	35.37	37.40	39.54	41.80
Depreciation	Rs Lakh		58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	58.33	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38	15.38
Interest on term loan	Rs Lakh		82.51	75.34	68.16	60.99	53.81	46.64	39.46	32.29	25.11	17.94	10.76	3.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		4.95	4.83	4.71	4.59	4.47	4.36	4.24	4.13	4.02	3.92	3.82	3.73	3.64	3.56	3.48	3.40	3.32	3.24	3.16	3.08	3.00	2.92	2.84	2.76	2.68
Return on Equity	Rs Lakh		60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00	60.00
Total Fixed Cost	Rs Lakh		216.80	210.13	203.50	196.91	190.36	183.85	177.40	170.99	164.64	158.34	152.03	145.72	139.41	133.10	126.79	120.48	114.17	107.86	101.55	95.24	88.93	82.62	76.31	70.00	63.69
Levillised COG	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Per Unit Cost of Generation	Unit	Levillised																									
O&M expn	Rs/kWh	1.06	0.66	0.70	0.74	0.78	0.83	0.87	0.92	0.98	1.03	1.09	1.15	1.22	1.29	1.36	1.44	1.52	1.61	1.70	1.80	1.90	2.01	2.13	2.25	2.38	2.51
Depreciation	Rs/kWh	2.89	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Int. on term loan	Rs/kWh	2.36	4.96	4.53	4.10	3.66	3.23	2.80	2.37	1.94	1.51	1.08	0.65	0.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.25	0.30	0.29	0.28	0.28	0.27	0.26	0.25	0.25	0.24	0.24	0.25	0.24	0.18	0.19	0.19	0.19	0.20	0.20	0.21	0.21	0.22	0.23	0.23	0.24	0.25
RoE	Rs/kWh	3.83	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	3.60	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33	4.33
Total COG	Rs/kWh		13.03	12.62	12.23	11.83	11.44	11.05	10.66	10.27	9.89	9.51	9.13	8.75	8.37	7.99	7.61	7.23	6.85	6.47	6.09	5.71	5.33	4.95	4.57	4.19	3.81
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147	0.133	0.120	0.109	0.098	0.089
Levillised Tariff	10.39	Rs/Unit																									

Determination of Accelerated Depreciation Benefit for Solar PV Power Projects																										
Depreciation amount		90%																								
Book Depreciation rate		5.28%																								
Tax Depreciation rate		80%																								
Income Tax (MAT)		20.0000%																								
Income Tax (Normal Rates)		32.4450%																								
Capital Cost		1000.0																								
Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	Rs Lakh	26.40	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	52.80	28.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																										
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	400.00	480.00	96.00	19.20	3.84	0.77	0.15	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	373.60	427.20	43.20	-33.60	-48.96	-52.03	-52.65	-52.77	-52.79	-52.80	-52.80	-52.80	-52.80	-52.80	-52.80	-52.80	-52.80	-28.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	121.21	138.61	14.02	-10.90	-15.89	-16.88	-17.08	-17.12	-17.13	-17.13	-17.13	-17.13	-17.13	-17.13	-17.13	-17.13	-17.13	-9.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	0.83	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	0.09
Levelling benefit	1.04	Rs/Unit																								

Assumptions for Solar Thermal Power Projects Parameters							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions		
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1		
			Capacity Utilization Factor	%	23.0%		
			Auxiliary Consumption Factor	%	10.0%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	1300		
3	Sources of Fund	Debt: Equity	Tariff Period	Years	25		
			Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lacs	910		
		Debt Component	Total Equity Amout	Rs Lacs	390		
			Loan Amount	Rs Lacs	910.00		
			Moratorium Period	years	0		
			Repayment Period(incl'd Moratorium)	years	12		
		Equity Component	Interest Rate	%	12.30%		
			Equity amount	Rs Lacs	390.00		
			Return on Equity for first 10 years	% p.a	20.00%		
			RoE Period	Year	10		
			Return on Equity 11th year onwards	% p.a	24.00%		
Weighted average of ROE		22.40%					
Discount Rate		10.62%					
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%		
			MAT Rate (for first 10 years)	%	20.000%		
			80 IA benefits	Yes/No	Yes		
		Depreciation	Depreciation Rate for first 12 years	%	5.83%		
			Depreciation Rate 13th year onwards	%	1.54%		
Years for 5.83% rate		12					
5	Working Capital	For Fixed Charges		Months			
		O&M Charges					
		Maintenance Spare				(% of O&M exepenses)	15%
		Receivables for Debtors				Months	2
		For Variable Charges					
Interest On Working Capital	%	12.80%					
6	Operation & Maintenance	power plant (FY12-13)		Rs Lacs	15.00		
		Total O & M Expenses Escalation		%	5.72%		

Determination of Tariff Component - (Solar Thermal)

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Net Generation	MU		1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs Lakh		15.00	15.86	16.77	17.72	18.74	19.81	20.94	22.14	23.41	24.75	26.16	27.66	29.24	30.91	32.68	34.55	36.53	38.62	40.82	43.16	45.63	48.24	51.00	53.91	57.00
Depreciation	Rs Lakh		75.83	75.83	75.83	75.83	75.83	75.83	75.83	75.83	75.83	75.83	75.83	75.83	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Interest on term loan	Rs Lakh		107.27	97.94	88.61	79.28	69.96	60.63	51.30	41.97	32.65	23.32	13.99	4.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		6.48	6.32	6.16	6.01	5.86	5.71	5.57	5.43	5.29	5.16	5.03	4.91	4.80	4.69	4.59	4.50	4.41	4.32	4.24	4.16	4.08	4.01	3.94	3.87	3.81
Return on Equity	Rs Lakh		78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	78.00	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60	93.60
Total Fixed Cost	Rs Lakh		282.58	273.95	265.37	256.85	248.39	239.98	231.64	223.37	215.18	207.05	214.95	207.00	146.85	148.61	150.47	152.43	154.51	156.71	159.04	161.49	164.09	166.84	169.74	172.81	176.06

Levellised COG

Per Unit Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M expn	Rs/kWh	1.32	0.83	0.87	0.92	0.98	1.03	1.09	1.15	1.22	1.29	1.36	1.44	1.53	1.61	1.70	1.80	1.91	2.01	2.13	2.25	2.38	2.52	2.66	2.81	2.97	3.14
Depreciation	Rs/kWh	3.45	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	4.18	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
Int. on term loan	Rs/kWh	2.82	5.92	5.40	4.89	4.37	3.86	3.34	2.83	2.31	1.80	1.29	0.77	0.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.31	0.36	0.35	0.34	0.33	0.32	0.31	0.31	0.30	0.29	0.28	0.30	0.29	0.22	0.23	0.23	0.24	0.24	0.25	0.25	0.26	0.27	0.28	0.28	0.29	0.30
RoE	Rs/kWh	4.57	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	4.30	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16
Total COG	Rs/kWh	12.46	15.58	15.11	14.63	14.16	13.70	13.23	12.77	12.32	11.87	11.42	11.85	11.42	8.10	8.20	8.30	8.41	8.52	8.64	8.77	8.91	9.05	9.20	9.36	9.53	9.71

Levellised Tariff	12.46	Rs/Unit
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Determination of Accelerated Depreciation Benefit for Solar Thermal Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.445%
Capital Cost	1300.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	34.32	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	68.64	37.44	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Accelerated Deprn.	Rs Lakh	520.00	624.00	124.80	24.96	4.99	1.00	0.20	0.04	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	485.68	555.36	56.16	-43.68	-63.65	-67.64	-68.44	-68.60	-68.63	-68.64	-68.64	-68.64	-68.64	-68.64	-68.64	-68.64	-68.64	-68.64	-37.44	0.00	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	157.58	180.19	18.22	-14.17	-20.65	-21.95	-22.21	-22.26	-22.27	-22.27	-22.27	-22.27	-22.27	-22.27	-22.27	-22.27	-22.27	-22.27	-12.15	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	0.91	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	1.81	
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	0.14	0.13	0.11	0.10	

Levellised benefit	1.24	Rs/Unit
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Select State

AP

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	85%
			PLF(during first year after Stablization)	%	85%
			PLF(second year onwards)	%	85%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	400.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	280.00
			Total Equity Amount	Rs Lacs	120.00
		Debt Component	Loan Amount	Rs Lacs	280.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	120.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
		Discount Rate (equiv. to WACC)		10.62%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
		Years for 5.83% depreciation rate		12.00	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption
Base Price	Rs/T				2315
Biomass Price Escalation Factor					5.00%
7	Operation & Maintenance	power plant			40.00
		Total O & M Expenses Escalation		%	5.72%

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		22.63	23.63	24.68	25.79	26.95	28.18	29.47	30.84	32.27	33.79	35.48	37.16	38.66	40.58	42.60	44.72	46.95	49.29	51.76	54.34
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		142.97	143.38	143.98	144.78	145.78	146.99	148.44	150.13	152.07	154.28	161.69	164.48	155.44	161.82	168.55	175.66	183.16	191.07	199.42	208.23

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levllised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.54	3.22	3.38	3.54	3.72	3.91	4.10	4.31	4.52	4.75	4.99	5.24	5.50	5.77	6.06	6.37	6.68	7.02	7.37	7.74	8.12
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.46	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.61	0.64	0.67	0.70	0.74	0.77	0.81
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	6.83	5.35	5.52	5.69	5.88	6.08	6.30	6.52	6.76	7.02	7.29	7.65	7.95	8.09	8.48	8.88	9.31	9.75	10.22	10.71	11.23

Levllised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.22	Rs/Kwh
Levllised Tariff (Fixed)	2.29	Rs/Kwh
Applicable Tariff (FY2012-13)	5.50	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levelised benefit	0.11 (Rs/kWh)
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Select State

Harayana

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	85%
			PLF(during first year after Stablization)	%	85%
			PLF(second year onwards)	%	85%
			Useful Life	Years	20
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW	400.00
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	280.00
		Debt Component	Total Equity Amout	Rs Lacs	120.00
			Loan Amount	Rs Lacs	280.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
		Equity Component	Interest Rate	%	12.30%
			Equity amount	Rs Lacs	120.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
					Weighted average of ROE
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
			Interest On Working Capital	%	12.80%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	2635
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			40.00
			Total O & M Expenses Escalation	%	5.72%

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		25.23	26.35	27.54	28.79	30.11	31.49	32.95	34.49	36.11	37.81	39.71	41.60	43.33	45.48	47.74	50.12	52.62	55.25	58.01	60.90
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00
Total Fixed Cost	Rs Lakh		145.57	146.11	146.85	147.78	148.93	150.31	151.92	153.78	155.91	158.31	160.92	163.75	166.72	169.81	173.06	176.48	180.06	183.81	187.72	191.79

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.16	3.66	3.84	4.03	4.24	4.45	4.67	4.90	5.15	5.41	5.68	5.96	6.26	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.52	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.65	0.68	0.71	0.75	0.79	0.82	0.87	0.91
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	7.51	5.83	6.02	6.23	6.44	6.67	6.91	7.17	7.44	7.73	8.04	8.44	8.78	8.96	9.39	9.84	10.31	10.81	11.33	11.88	12.45

Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.66	Rs/kwh
Levillised Tariff (Fixed)	2.34	Rs/kwh
Applicable Tariff (FY2012-13)	6.00	Rs/kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15

Levelling benefit	0.11 (Rs/kWh)
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Select State

Maharashtra

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions		
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1		
			Auxillary Consumption during stabilisation	%	10%		
			Auxillary Consumption after stabilisation	%	10%		
			PLF(Stablization for 6 months)	%	85%		
			PLF(during first year after Stablization)	%	85%		
			PLF(second year onwards)	%	85%		
			Useful Life	Years	20		
			2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lacs	280.00		
			Total Equity Amout	Rs Lacs	120.00		
		Debt Component	Loan Amount	Rs Lacs	280.00		
			Moratorium Period	years	0		
			Repayment Period(incld Moratorium)	years	12		
			Interest Rate	%	12.30%		
		Equity Component	Equity amount	Rs Lacs	120.00		
			Return on Equity for first 10 years	% p.a	20.00%		
			RoE Period	Year	10.00		
			Return on Equity after 10 years		24.00%		
			Weighted average of ROE		22.00%		
		Discount Rate (equiv. to WACC)		10.62%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%		
			MAT Rate (for first 10 years)	%	20.0%		
			80 IA benefits	Yes/No	Yes		
		Depreciation	Depreciation Rate(power plant)	%	5.83%		
			Depreciation Rate 13th year onwards	%	2.50%		
			Years for 5.83% depreciation rate		12.00		
5	Working Capital	For Fixed Charges	O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)	15%		
		For Variable Charges	Receivables for Debtors	Months	2		
			Biomass Stock	Months	4		
		6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
					Base Price	Rs/T	2695
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	power plant			40.00		
		Total O & M Expenses Escalation		%	5.72%		

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		25.72	26.87	28.08	29.36	30.70	32.12	33.61	35.18	36.83	38.57	40.51	42.43	44.20	46.40	48.71	51.13	53.68	56.36	59.18	62.13
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		146.05	146.62	147.38	148.35	149.53	150.93	152.57	154.47	156.63	159.07	166.71	169.76	160.98	167.63	174.66	182.07	189.89	198.14	206.84	216.03

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.28	3.74	3.93	4.13	4.33	4.55	4.78	5.02	5.27	5.53	5.81	6.10	6.40	6.72	7.06	7.41	7.78	8.17	8.58	9.01	9.46
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.53	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.58	0.60	0.63	0.66	0.69	0.73	0.76	0.80	0.84	0.88	0.93
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	7.63	5.92	6.12	6.33	6.55	6.78	7.03	7.29	7.57	7.87	8.18	8.58	8.94	9.12	9.56	10.02	10.50	11.00	11.54	12.09	12.68

Levallised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.74	Rs/Kwh
Levallised Tariff (Fixed)	2.35	Rs/Kwh
Applicable Tariff (FY2012-13)	6.10	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00	
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00	
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit	0.11	(Rs/kWh)
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Select State

Punjab

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	85%
			PLF(during first year after Stablization)	%	85%
			PLF(second year onwards)	%	85%
			Useful Life	Years	20
			2	Project Cost	Capital Cost/MW
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	280.00
			Total Equity Amount	Rs Lacs	120.00
		<u>Debt Component</u>	Loan Amount	Rs Lacs	280.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		<u>Equity Component</u>	Equity amount	Rs Lacs	120.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
	Discount Rate (equiv. to WACC)		10.62%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		<u>Depreciation</u>	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
	Years for 5.83% depreciation rate		12.00		
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges	(% of O&M exepenses)	Months	1
		Maintenance Spare			15%
		Receivables for Debtors		Months	2
		<u>For Variable Charges</u>			
6	Fuel Related Assumptions	Biomass Stock		Months	4
		Interest On Working Capital		%	12.80%
		<u>Biomass</u>	Specific Fuel Consumption	kg/kWh	1.25
		Base Price	Rs/T	2756	
		Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	power plant			40.00
		Total O & M Expenses Escalation		%	5.72%

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		26.21	27.39	28.62	29.93	31.30	32.75	34.27	35.87	37.56	39.34	41.31	43.28	45.09	47.33	49.69	52.16	54.76	57.50	60.37	63.39
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		146.55	147.14	147.93	148.92	150.13	151.56	153.24	155.16	157.36	159.84	167.51	170.60	161.87	168.57	175.64	183.10	190.97	199.27	208.03	217.28

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	5.40	3.83	4.02	4.22	4.43	4.65	4.89	5.13	5.39	5.66	5.94	6.24	6.55	6.87	7.22	7.58	7.96	8.36	8.77	9.21	9.67
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.54	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.65	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.95
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	7.76	6.01	6.21	6.43	6.65	6.89	7.15	7.42	7.70	8.00	8.32	8.73	9.09	9.29	9.73	10.20	10.69	11.21	11.75	12.32	12.91

Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.83	Rs/Kwh
Levillised Tariff (Fixed)	2.36	Rs/Kwh
Applicable Tariff (FY2012-13)	6.19	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit	0.11	(Rs/kWh)
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Select State

Rajasthan

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	85%
			PLF(during first year after Stablization)	%	85%
			PLF(second year onwards)	%	85%
			Useful Life	Years	20
			2	Project Cost	Capital Cost/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	280.00
			Total Equity Amount	Rs Lacs	120.00
		Debt Component	Loan Amount	Rs Lacs	280.00
			Moratorium Period	years	0
			Repayment Period(inclcd Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	120.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
		Discount Rate (equiv. to WACC)		10.62%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
		Years for 5.83% depreciation rate		12.00	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors	Months	2	
		For Variable Charges	Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	2300
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	power plant			40.00
			Total O & M Expenses Escalation	%	5.72%

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		22.51	23.50	24.54	25.64	26.80	28.02	29.31	30.67	32.09	33.60	35.28	36.95	38.45	40.36	42.36	44.47	46.69	49.02	51.46	54.03
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		142.85	143.26	143.85	144.64	145.63	146.84	148.28	149.96	151.89	154.09	161.49	164.27	155.22	161.59	168.31	175.40	182.89	190.79	199.13	207.93

Levillised tariff corresponding to Useful life

Per Unit COG of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.51	3.19	3.35	3.52	3.70	3.88	4.08	4.28	4.49	4.72	4.96	5.20	5.46	5.74	6.02	6.32	6.64	6.97	7.32	7.69	8.07
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.46	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57	0.60	0.63	0.66	0.70	0.73	0.77	0.81
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	6.79	5.33	5.49	5.67	5.86	6.06	6.27	6.49	6.73	6.99	7.26	7.61	7.91	8.05	8.43	8.84	9.26	9.70	10.17	10.66	11.17

Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.19	Rs/Kwh
Levillised Tariff (Fixed)	2.29	Rs/Kwh
Applicable Tariff (FY2012-13)	5.48	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Depm.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00	
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00	
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15		

Levellised benefit	0.11 (Rs/kWh)
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Select State

TN

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions		
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1		
			Auxillary Consumption during stabilisation	%	10%		
			Auxillary Consumption after stabilisation	%	10%		
			PLF(Stablization for 6 months)	%	85%		
			PLF(during first year after Stablization)	%	85%		
			PLF(second year onwards)	%	85%		
			Useful Life	Years	20		
			2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lacs	280.00		
			Total Equity Amout	Rs Lacs	120.00		
		Debt Component	Loan Amount	Rs Lacs	280.00		
			Moratorium Period	years	0		
			Repayment Period(incld Moratorium)	years	12		
			Interest Rate	%	12.30%		
		Equity Component	Equity amount	Rs Lacs	120.00		
			Return on Equity for first 10 years	% p.a	20.00%		
			RoE Period	Year	10.00		
			Return on Equity after 10 years		24.00%		
			Weighted average of ROE		22.00%		
	Discount Rate (equiv. to WACC)		10.62%				
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%		
			MAT Rate (for first 10 years)	%	20.0%		
			80 IA benefits	Yes/No	Yes		
		Depreciation	Depreciation Rate(power plant)	%	5.83%		
			Depreciation Rate 13th year onwards	%	2.50%		
	Years for 5.83% depreciation rate		12.00				
5	Working Capital	For Fixed Charges					
		O&M Charges		Months	1		
		Maintenance Spare	(% of O&M exepenses)		15%		
		Receivables for Debtors		Months	2		
		For Variable Charges					
6	Fuel Related Assumptions	Biomass Stock		Months	4		
		Interest On Working Capital		%	12.80%		
		Specific Fuel Consumption		kg/kWh	1.25		
		Base Price		Rs/T	2277		
		Biomass Price Escalation Factor			5.00%		
		7	Operation & Maintenance	power plant			40.00
			Total O & M Expenses Escalation		%	5.72%	

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		22.32	23.30	24.34	25.43	26.58	27.79	29.06	30.40	31.82	33.31	34.98	36.63	38.11	40.00	41.99	44.08	46.28	48.59	51.01	53.56
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		142.66	143.06	143.64	144.42	145.40	146.60	148.03	149.69	151.62	153.81	161.18	163.95	154.88	161.24	167.94	175.02	182.48	190.36	198.68	207.45

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.46	3.16	3.32	3.49	3.66	3.84	4.04	4.24	4.45	4.67	4.91	5.15	5.41	5.68	5.96	6.26	6.57	6.90	7.25	7.61	7.99
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.46	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.73	0.76	0.80
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	6.74	5.29	5.46	5.63	5.82	6.01	6.22	6.45	6.68	6.93	7.20	7.56	7.86	7.99	8.37	8.77	9.19	9.63	10.09	10.58	11.09

Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.16	Rs/Kwh
Levillised Tariff (Fixed)	2.28	Rs/Kwh
Applicable Tariff (FY2012-13)	5.44	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00	
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00	
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit	0.11	(Rs/kWh)
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Select State

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Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions		
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1		
			Auxillary Consumption during stabilisation	%	10%		
			Auxillary Consumption after stabilisation	%	10%		
			PLF(Stablization for 6 months)	%	85%		
			PLF(during first year after Stablization)	%	85%		
			PLF(second year onwards)	%	85%		
			Useful Life	Years	20		
			2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lacs/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lacs	280.00		
			Total Equity Amount	Rs Lacs	120.00		
		Debt Component	Loan Amount	Rs Lacs	280.00		
			Moratorium Period	years	0		
			Repayment Period(incld Moratorium)	years	12		
			Interest Rate	%	12.30%		
		Equity Component	Equity amount	Rs Lacs	120.00		
			Return on Equity for first 10 years	% p.a	20.00%		
			RoE Period	Year	10.00		
			Return on Equity after 10 years		24.00%		
			Weighted average of ROE		22.00%		
			Discount Rate (equiv. to WACC)		10.62%		
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%		
			MAT Rate (for first 10 years)	%	20.0%		
			80 IA benefits	Yes/No	Yes		
		Depreciation	Depreciation Rate(power plant)	%	5.83%		
			Depreciation Rate 13th year onwards	%	2.50%		
			Years for 5.83% depreciation rate		12.00		
5	Working Capital	For Fixed Charges	O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)	15%		
		For Variable Charges	Receivables for Debtors	Months	2		
			Biomass Stock	Months	4		
		6	Fuel Related Assumptions	Biomass	Interest On Working Capital	%	12.80%
					Specific Fuel Consumption	kg/kWh	1.25
7	Operation & Maintenance	power plant	Base Price	Rs/T	2355		
			Biomass Price Escalation Factor		5.00%		
			Total O & M Expenses Escalation	%	5.72%		

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		22.96	23.97	25.04	26.16	27.35	28.59	29.91	31.29	32.75	34.29	36.01	37.71	39.25	41.20	43.25	45.40	47.66	50.04	52.54	55.16
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		143.29	143.73	144.34	145.15	146.17	147.41	148.88	150.58	152.55	154.79	162.21	165.04	156.02	162.43	169.19	176.33	183.86	191.81	200.20	209.05

Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levillised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.62	3.27	3.43	3.61	3.79	3.98	4.17	4.38	4.60	4.83	5.07	5.33	5.59	5.87	6.17	6.48	6.80	7.14	7.50	7.87	8.27
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.47	0.34	0.36	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.61	0.65	0.68	0.71	0.75	0.78	0.82
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	6.91	5.41	5.58	5.76	5.95	6.16	6.37	6.60	6.85	7.11	7.38	7.75	8.06	8.20	8.59	9.00	9.43	9.88	10.36	10.86	11.38

Levillised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.27	Rs/Kwh
Levillised Tariff (Fixed)	2.29	Rs/Kwh
Applicable Tariff (FY2012-13)	5.57	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation																					
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00	
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00	
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levelling benefit **0.11 (Rs/kWh)**

Select State

Others

Assumption for Biomass Gasifier Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	10%
			Auxillary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	%	85%
			PLF(during first year after Stablization)	%	85%
			PLF(second year onwards)	%	85%
			Useful Life	Years	20
			2	Project Cost	Capital Cost/MW
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	280.00
			Total Equity Amout	Rs Lacs	120.00
		Debt Component	Loan Amount	Rs Lacs	280.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	120.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
			Discount Rate (equiv. to WACC)		10.62%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15%
		Receivables for Debtors		Months	2
			For Variable Charges		
		Biomass Stock	Months	4	
		Interest On Working Capital	%	12.80%	
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	2476
			Biomass Price Escalation Factor		5.00%
			7	Operation & Maintenance	power plant
		Total O & M Expenses Escalation	%	5.72%	

Determination of Tariff Component: Biomass Gasifier Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45	7.45
Auxiliary Consumption	MU		0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.74
Net Generation	MU		6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70

Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	23.33	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Interest on term loan	Rs Lakh		33.01	30.14	27.27	24.40	21.53	18.66	15.79	12.92	10.05	7.18	4.31	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		23.94	25.00	26.12	27.30	28.54	29.85	31.23	32.68	34.21	35.81	37.61	39.40	41.01	43.05	45.19	47.44	49.81	52.29	54.90	57.65
Return on Equity	Rs Lakh		24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	24.00	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80	28.80
Total Fixed Cost	Rs Lakh		144.28	144.76	145.43	146.29	147.37	148.66	150.19	151.97	154.00	156.31	163.82	166.72	157.79	164.28	171.14	178.38	186.01	194.07	202.57	211.54

Levallised tariff corresponding to Useful life

Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.85	3.44	3.61	3.79	3.98	4.18	4.39	4.61	4.84	5.08	5.34	5.60	5.88	6.18	6.48	6.81	7.15	7.51	7.88	8.28	8.69
O&M expn	Rs/kWh	0.89	0.60	0.63	0.67	0.71	0.75	0.79	0.83	0.88	0.93	0.98	1.04	1.10	1.16	1.23	1.30	1.37	1.45	1.54	1.62	1.72
Depreciation	Rs/kWh	0.31	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Int. on term loan	Rs/kWh	0.25	0.49	0.45	0.41	0.36	0.32	0.28	0.24	0.19	0.15	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.49	0.36	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.53	0.56	0.59	0.61	0.64	0.67	0.71	0.74	0.78	0.82	0.86
RoE	Rs/kWh	0.38	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
Total COG	Rs/kWh	7.17	5.59	5.77	5.96	6.16	6.38	6.61	6.85	7.11	7.38	7.67	8.05	8.37	8.53	8.94	9.36	9.81	10.28	10.78	11.30	11.85

Levallised Tariff	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147

Variable Cost	3.44	Rs/Kwh
Levallised Tariff (Fixed)	2.32	Rs/Kwh
Applicable Tariff (FY2012-13)	5.75	Rs/Kwh

Determination of Accelerated Depreciation for Biomass Gasifier Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	400.0

Years ----->	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	10.56	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	21.12	11.52	0.00	0.00

Accelerated Depreciation																						
Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	160.00	192.00	38.40	7.68	1.54	0.31	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	149.44	170.88	17.28	-13.44	-19.58	-20.81	-21.06	-21.11	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-21.12	-11.52	0.00	0.00
Tax Benefit	Rs Lakh	48.49	55.44	5.61	-4.36	-6.35	-6.75	-6.83	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-6.85	-3.74	0.00	0.00
Net Energy generation	MU	3.35	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70	6.70
Per unit benefit	Rs/Unit	1.45	0.83	0.08	-0.07	-0.09	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.06	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Levellised benefit 0.11 (Rs/kWh)

Assumption for Biogas Power Project Parameters

S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Assumptions
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxillary Consumption during stabilisation	%	12%
			PLF	%	90%
			Useful Life	Years	20
2	Project Cost		Power Plant Cost	Rs Lacs/MW	1100
		Capital Cost/MW	Net Power Plant Cost	Rs Lacs/MW	800
3	Financial Assumptions	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lacs	560.00
			Total Equity Amout	Rs Lacs	240.00
		Debt Component	Loan Amount	Rs Lacs	560.00
			Moratorium Period	years	0
			Repayment Period(incld Moratorium)	years	12
			Interest Rate	%	12.30%
		Equity Component	Equity amount	Rs Lacs	240.00
			Return on Equity for first 10 years	% p.a	20.00%
			RoE Period	Year	10.00
			Return on Equity after 10 years		24.00%
			Weighted average of ROE		22.00%
Discount Rate (equiv. to WACC)		10.62%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	32.445%
			MAT Rate (for first 10 years)	%	20.0%
			80 IA benefits	Yes/No	Yes
		Depreciation	Depreciation Rate(power plant)	%	5.83%
			Depreciation Rate 13th year onwards	%	2.50%
			Years for 5.83% depreciation rate		12.00
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M expenses)	15%
		For Variable Charges	Receivables for Debtors	Months	2
			Biomass Stock	Months	4
		Interest On Working Capital	%	12.80%	
		6	Fuel Related Assumptions	Biomass	Base Price(FY11-12)
Specific Fuel Consumption	kg/kWh				3
Substrates Price Escalation Factor					5.00%
7	Operation & Maintenance		power plant (FY 2012-13)		40.00
			Total O & M Expenses Escalation	%	5.72%

Determination of Tariff Component: Biogas Power Projects

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Installed Capacity	MW		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gross Generation	MU		7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88	7.88
Auxiliary Consumption	MU		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Net Generation	MU		6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94
Variable Cost																						
Variable Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Biomass Cost	Rs Lakh		234.15	245.86	258.16	271.06	284.62	298.85	313.79	329.48	345.95	363.25	381.41	400.48	420.51	441.53	463.61	486.79	511.13	536.69	563.52	591.70
Fixed Cost																						
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
O&M Expenses	Rs Lakh		40.00	42.29	44.71	47.26	49.97	52.83	55.85	59.04	62.42	65.99	69.76	73.75	77.97	82.43	87.15	92.13	97.40	102.97	108.87	115.09
Depreciation	Rs Lakh		46.67	46.67	46.67	46.67	46.67	46.67	46.67	46.67	46.67	46.67	46.67	46.67	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
Interest on term loan	Rs Lakh		66.01	60.27	54.53	48.79	43.05	37.31	31.57	25.83	20.09	14.35	8.61	2.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working Capital	Rs Lakh		20.91	21.67	22.47	23.33	24.23	25.18	26.19	27.26	28.39	29.58	31.05	32.38	33.27	34.88	36.57	38.35	40.21	42.18	44.24	46.41
Return on Equity	Rs Lakh		48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	48.00	57.60	57.60	57.60	57.60	57.60	57.60	57.60	57.60
Total Fixed Cost	Rs Lakh		221.58	218.89	216.38	214.05	211.91	209.99	208.28	206.80	205.57	204.59	213.69	213.27	188.84	194.91	201.32	208.08	215.22	222.75	230.70	239.10
Levallised tariff corresponding to Useful life																						
Per Unit Cost of Generation	Unit	Levallised	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Variable COG	Rs/kWh	4.76	3.38	3.54	3.72	3.91	4.10	4.31	4.52	4.75	4.99	5.24	5.50	5.77	6.06	6.36	6.68	7.02	7.37	7.74	8.12	8.53
O&M expn	Rs/kWh	0.86	0.58	0.61	0.64	0.68	0.72	0.76	0.80	0.85	0.90	0.95	1.01	1.06	1.12	1.19	1.26	1.33	1.40	1.48	1.57	1.66
Depreciation	Rs/kWh	0.60	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.67	0.29	0.29	0.29	0.29	0.29	0.29	0.29	0.29
Int. on term loan	Rs/kWh	0.48	0.95	0.87	0.79	0.70	0.62	0.54	0.46	0.37	0.29	0.21	0.12	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	0.40	0.30	0.31	0.32	0.34	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.48	0.50	0.53	0.55	0.58	0.61	0.64	0.67
RoE	Rs/kWh	0.73	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Total COG	Rs/kWh	7.83	6.57	6.70	6.84	6.99	7.16	7.33	7.52	7.73	7.95	8.18	8.58	8.85	8.78	9.17	9.58	10.02	10.47	10.95	11.45	11.97
Levallised Tariff																						
Levallised Tariff	Unit	Year ->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discount Factor			1	0.904	0.817	0.739	0.668	0.604	0.546	0.493	0.446	0.403	0.365	0.330	0.298	0.269	0.244	0.220	0.199	0.180	0.163	0.147
Variable Cost (FY2012-13)	3.38	Rs/Kwh																				
Levallised Tariff (Fixed)	3.06	Rs/Kwh																				
Applicable Tariff (FY2012-13)	6.44	Rs/Kwh																				

Determination of Accelerated Depreciation for Biogas Power Project

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	80%
Income Tax (MAT)	20.000%
Income Tax (Normal Rates)	32.45%
Capital Cost	800.0

Years	Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
Book Depreciation	%	2.64%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	2.88%	0.00%	0.00%
Book Depreciation	Rs Lakh	21.12	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	42.24	23.04	0.00	0.00

Accelerated Depreciation

Opening	%	100%	60%	12%	2%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	40%	48.00%	9.60%	1.92%	0.38%	0.08%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	60%	12%	2.40%	0.48%	0.10%	0.02%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Accelerated Deprn.	Rs Lakh	320.00	384.00	76.80	15.36	3.07	0.61	0.12	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	298.88	341.76	34.56	-26.88	-39.17	-41.63	-42.12	-42.22	-42.24	-42.24	-42.24	-42.24	-42.24	-42.24	-42.24	-42.24	-42.24	-42.24	-23.04	0.00	0.00
Tax Benefit	Rs Lakh	96.97	110.88	11.21	-8.72	-12.71	-13.51	-13.66	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-13.70	-7.48	0.00	0.00
Net Energy generation	MU	3.47	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94	6.94
Per unit benefit	Rs/Unit	2.80	1.60	0.16	-0.13	-0.18	-0.19	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.11	0.00	0.00
Discounting Factor		1.00	0.95	0.86	0.78	0.70	0.64	0.57	0.52	0.47	0.42	0.38	0.35	0.31	0.28	0.26	0.23	0.21	0.19	0.17	0.15	

Tax Benefit Levellised	13.91
Electricity Generation (Levellis	6.57

Levellised benefit	0.21	(Rs/kWh)
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