

**CENTRAL ELECTRICITY REGULATORY COMMISSION**

**NEW DELHI**

**Petition No. 14/SM/2022**

**Coram: Shri I.S. Jha, Member  
Shri Arun Goyal, Member  
Shri P.K. Singh, Member**

**Date: November 7, 2022**

IN THE MATTER OF

**Determination of levellised generic tariff for FY 2022-23 under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020.**

**ORDER**

1. The Commission has notified the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 (hereinafter referred to as "the RE Tariff Regulations"), which provide for terms and conditions and the procedure for determination of tariff of the following categories of Renewable Energy (RE) generating stations:
  - a. Small Hydro Projects;
  - b. Biomass Power Projects with Rankine Cycle technology;
  - c. Non-fossil fuel-based co-generation Project;
  - d. Biomass Gasifier based Power Projects;
  - e. Biogas based Power Projects
2. As per Regulation 7 of the RE Tariff Regulations, the Commission shall determine project specific tariff for the following RE technologies:
  - a. Solar PV power projects, floating solar projects and solar thermal power projects;
  - b. Wind power projects (both on-shore and off-shore);

- c. Biomass gasifier-based power projects and biogas based power projects – if a project developer opts for project specific tariff;
  - d. Municipal solid waste-based power projects and refuse derived fuel based power projects;
  - e. Renewable hybrid energy projects;
  - f. Renewable energy with storage projects; and
  - g. Any other project based on new renewable energy sources or technologies approved by MNRE.
3. Further, Regulation 8(1) of the RE Tariff Regulations provides as under:
- “8. Petition and proceedings for determination of tariff*
- 1) In case of renewable energy projects for which generic tariff has to be determined as per these regulations, the Commission shall determine such generic tariff through a Generic Tariff Order at least one month before the commencement of year for each year of the Control Period:*
- Provided that for second year of Control Period i.e., from 01.04.2021 to 31.03.2022, the Generic Tariff Order shall be determined upon issuance of these regulations.”*
4. The Commission, in discharge of the mandate under Regulation 8(1) of the RE Tariff Regulations, is required to determine the generic tariff of the RE projects for the third year of control period (i.e. FY 2022-23).
  5. For this purpose, the Commission issued a Public Notice on 12.08.2022 along with a proposal for “Determination of levellised generic tariff for FY 2022-23 under Regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 and invited comments/suggestions/objections from the stakeholders. The last date for submission of comments/suggestions/objections was as 30.08.2022.
  6. In response to this public notice, written comments/ suggestions/ objections were received from following stakeholders:
    - a. Tirupati Sugars Ltd.
    - b. Jaya Hydro Power Pvt Ltd.
    - c. Venika Green Power Private Ltd.

- d. The South Indian Sugar Mills Association
  - e. SAEL Limited
  - f. PSPCL
  - g. The Hind Samachar Limited
7. The Commission has considered the comments/ suggestions/ objections of the stakeholders and the analyses/ decisions of the Commission thereon are dealt with in relevant paragraphs of this order.
8. **Fuel Cost of Bagasse based Cogeneration Plants**

Commission's Proposal

8.1 The Commission, as per Regulation 44 (1) of the RE Tariff Regulations, has specified the Bagasse fuel price during third year of the Control Period (i.e. FY 2022-23) in the following table. The fuel prices have been derived by escalating the notified prices of first year of control period by 5%. For each subsequent year of the Tariff Period, a normative escalation factor of 5% per annum shall be applicable, unless reviewed and ordered otherwise by the Commission.

<b>States</b>	<b>Bagasse Price for FY 2021-22 (Rs/ MT)</b>	<b>Bagasse Price for FY 2022-23 (Rs/ MT)</b>
Andhra Pradesh	1971.90	2070.50
Haryana	2804.55	2944.78
Maharashtra	2763.60	2901.78
Punjab	2468.55	2591.98
Tamil Nadu	2124.15	2230.36
Telangana	1970.85	2069.39
Uttar Pradesh	2199.75	2309.74
Other States	2387.7	2507.09

Comments Received

8.2 Tirupati Sugars Ltd. has submitted that Fuel Cost in Haryana, Maharashtra and Punjab are higher than Bihar. But the state of Bihar also purchases bagasse from agriculturist who crushes their sugarcane locally and also bring Bagasse from Agriculturist, that requires transportation cost. So, they have requested the Commission to consider cost of Bagasse to be around Rs.2800/MT.

8.3 Tirupati Sugar Ltd suggested that the fuel cost fixed for FY 2022-23 shall be escalated by 5% each year automatically if the appropriate Commission has not determined the tariff for ensuing financial year.

8.4 Tirupati Sugars Ltd. submitted that DISCOMs in Bihar do not allow escalated fuel cost each year and special order is required by BERC for the said. So, they are deprived of availing price of Rs2387.70/MT. They requested the Commission to take appropriate action so BERC would follow the instructions of the CERC Tariff Regulation as per Sec61 of the Act.

8.5 South Indian Sugar Mills Association, Tamil Nadu (SISMA) has submitted that there is a massive variation between bagasse prices assigned for different States. As for Tamil Nadu, the market price for bagasse for FY 2021-22 was around Rs. 3250/- per ton and suitable escalation from that can be considered for succeeding year. Assuming 5% increase uniformly throughout the country is quite contrary. So, Fuel cost should be considered based on market price.

Analysis and Decision

8.6 Fuel cost for generic tariff determination is as per the RE Tariff Regulations. Review of the fuel cost is outside the scope of the present exercise of determination of levellised generic tariff. However, next control period is due and the fuel cost of various technologies will be reviewed as part of the exercise of finalisation of RE Tariff Regulations for the next control period.

8.7 It is mentioned in RE Regulation,2020 in para 44(1) price of bagasse for first year of the Control Period i.e. financial year 2020-21 as specified is escalated at the rate of

5% per annum to arrive at the base price for subsequent years of the Control Period, unless specifically reviewed by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 5% per annum shall be applicable on bagasse prices. Hence, the fuel cost is retained as proposed.

## 9. Fuel Cost of Biomass based Power Plants

### Commission's Proposal

9.1 The Commission, as per Regulation 38 of the RE Tariff Regulations, has specified the Biomass fuel price for third year of the Control Period (i.e. FY 2022-23) in the table below. The fuel prices have been derived by escalating the notified prices of first year of control period by 5%. For each subsequent year of the Tariff Period, a normative escalation factor of 5% per annum shall be applicable, unless reviewed and ordered otherwise by the Commission.

<b>States</b>	<b>Biomass Price for FY 2021-22 (Rs/ MT)</b>	<b>Biomass Price for FY 2022-23 (Rs/ MT)</b>
Andhra Pradesh	3492.3	3666.92
Haryana	3975.3	4174.07
Maharashtra	4065.6	4268.88
Punjab	4158	4365.90
Rajasthan	3470.25	3643.76
Tamil Nadu	3435.6	3607.38
Telangana	3492.3	3666.92
Uttar Pradesh	3553.2	3730.86
Other States	3734.85	3921.59

### Comments Received

9.2 Punjab State Corporation Limited (PSPCL) commented that the actual fuel cost of biomass and bagasse in Punjab is much lower and therefore results in an undue enrichment to the project developers at the cost of the general consumers in the State

of Punjab. The cost of both biomass and bagasse fuel considered is on a steeper side as compared to the actual cost of the said fuels in the State of Punjab. They commented that the Commission has fixed a higher base price, and consequently a higher price after application of escalation index for biomass and bagasse Fuel for the State of Punjab without taking into account the actual fuel price.

#### Analysis and Decision

9.3 The fuel cost for generic tariff determination is as per the RE Tariff Regulations. Review of the fuel cost is outside the scope of the present exercise of determination of levelled generic tariff. However, next control period is due and the fuel cost of various technologies will be reviewed as part of the exercise of finalisation of RE Tariff Regulations for the next control period.

### **10. Capital Cost of Bagasse based Cogeneration Plants**

#### Commission's Proposal

10.1 Regulation 39 of the RE Tariff Regulations has specified normative capital cost for the Non-Fossil Fuel Based Cogeneration Projects as Rs.492 lakh/MW for FY 2022-23.

#### Comments Received

10.2 Tirupati Sugars Ltd. submitted that there is an increase in cost of iron materials, labour, land, equipment, etc. for the construction of project. So, the Commission should consider to increase per MW Capital Cost in proportion of Price Index announced by Govt. of India.

#### Analysis and Decision

10.3 As explained in the proposal, the Commission has retained the Capital cost based on the data received from the various institutions like IREDA, PFC, SECI and review of various tariff orders of the RE technologies issued by SERCs. Hence, no change in the Capital cost is required. However, the capital cost of various technologies will be reviewed as part of the exercise of finalisation of RE Tariff Regulations for the next control period.

**11. Capital Cost of Small Hydro Project**Commission's Proposal

11.1 Normative capital cost for small hydro projects for FY 2022-23 in accordance to Regulation 27 (1) of the RE Tariff Regulations as under:

<b>Region</b>	<b>Projects Size</b>	<b>Capital Cost (Rs.Lakh/MW)</b>
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	1100
	5 MW to 25 MW	1100
Others States	Below 5 MW	780
	5 MW to 25 MW	900

Comments Received

11.2 Venika Green Power Pvt. Ltd. commented that the steel and cement prices have increased and most of the SHPs are in remote areas so the cost of transmission line is also high due to non-availability of substations nearby places. So, for other States in the category of 5 MW to 25 MW capital cost should be at least 1100 lakhs/MW.

Analysis and Decision

11.3 After reviewing various tariff orders of the RE technologies issued by SERCs and data received from the various institutions like IREDA, PFC, SECI it led to conclude that capital cost should remain unchanged. However, the capital cost of various technologies will be reviewed as part of the exercise of finalisation of RE Tariff Regulations for the next control period.

**12. Capital Cost of Biomass Based Rankine Power Plant**Commission's Proposal

12.1 The Commission, under Regulation 31 of the RE Tariff Regulations has specified the normative capital cost for Biomass based Power Projects for FY 2022-23, as under

<b>Biomass Rankine Cycle Projects</b>	<b>Capital Cost (Rs lakh/ MW)</b>
Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	559
Project [other than rice straw and Juliflora(plantation) based project] with air cooled condenser	600
For rice straw and Juliflora (plantation) based project with water cooled condenser	611
For rice straw and Juliflora (plantation) based project with air cooled condenser	652

#### Comments Received

12.2 SAEL commented that the Commission should consider certain crucial factors for escalation of capital cost. The growth in cement and steel prices have been attributed to the increase in input costs such as power and fuel as well as increase in freight expenses has also lead to increase in the expenditure incurred towards building and civil works. So, proposed capital cost of Rs. 652 Lakh/MW for biomass-based power projects using rankine cycle technology (with air cooled condensers) commissioning in FY 2022-23 does not seem to be aligned with the actual market dynamics and trends. So, they have requested to reconsider the capital cost.

12.3 The Hind Samachar Limited requested that there should be escalation in the capital cost for Biomass Power projects based on rice straw using Rankine Cycle Technology. Proposed capital cost is not aligned with the actual market dynamics and trends. Capital Cost incurred by HSL is Rs. 1046 Lakh /MW

#### Analysis and Decision

12.4 After reviewing various tariff orders of the RE technologies issued by SERCs and



data received from the various institutions like IREDA, PFC, SECI the Commission is of the view that capital cost should remain unchanged. However, the capital cost of various technologies will be reviewed as part of the exercise of finalisation of RE Tariff Regulations for the next control period.

### **13. Return on Equity**

#### Commission's Proposal

13.1 As regards Rate of Return on Equity, sub-Regulation (2) of Regulation 16 of the RE Tariff Regulations specifies as under:

***“16. Return on Equity***

... ..

*(2) The normative Return on Equity shall be 14%. The normative Return on Equity shall be grossed up by the latest available notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the latest available notified Corporate Tax rate for the remaining Tariff Period.”*

For computation of Rate of Return on Equity, MAT Rate of 17.47% and Corporate Tax Rate of 34.94% has been considered. Accordingly, Rate of Return has been computed as 16.96% for first 20 years and 21.52% after 20 years of useful life.

#### Comments Received

13.2 Tirupati Sugars Ltd. submitted that ROE for Bagasse based cogeneration Plants should be 20% for first 20 years and 22 % after 20 years up to the useful life of the plant.

13.3 Venika Green Power Pvt.Ltd. commented that the private equity partners are showing interest in projects if ROE is 16%. With 14% ROE it is difficult to get equity partners for SHPs in central India and southern India as CUF of the project is low due to low/Medium head projects in Central India. So, they requested to consider 16% as ROE.

#### Analysis and Decision

13.4 The Return on Equity considered for generic tariff determination is as per the provisions of the RE Tariff Regulations. Any change in the Return of Equity is outside

the scope of the present exercise of determination of levellised generic tariff. In view of the above, the Commission has decided to continue with the rate of return on equity as per the proposal dated 12.08.2022.

#### **14. Interest on Loan**

##### **Commission's Proposal**

14.1 Sub-Regulation (1) of Regulation 14 of the RE Regulations specifies the loan tenure of 15 years for the purpose of determination of generic and project specific tariff for RE projects, which is reproduced as under:

*“(a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loan for calculation for interest on loan.....*

*(b) For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months shall be considered.*

*(c) Notwithstanding any moratorium period availed by project developer, 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*

14.2 The monthly data of MCLR for the last available six months from State Bank of India and the average MCLR is shown in following table:

<b>Effective Date</b>	<b>One Year Tenor MCLR rates</b>
15.01.2022 to 14.02.2022	7.00%
15.02.2022 to 14.03.2022	7.00%
15.03.2022 to 14.04.2022	7.00%
15.04.2022 to 14.05.2022	7.10%
15.05.2022 to 14.06.2022	7.20%
15.06.2022 to 14.07.2022	7.40%
<b>Avg. for last Available 6 months</b>	<b>7.12%</b>

Comments Received

14.3 Tirupati Sugars Ltd. submitted that IOL should be at least 10% or higher than specified in the proposal.

14.4 Venika Green Power Ltd commented that generally SHP are financed by financial institutions like IREDA and interest rate offered by IREDA is 10.95 % for term loan and 11.45% during construction. Recently RBI has increased interest rate by 50 basis points. Hence, they pleaded that the interest rates should be as per IREDA.

Analysis and Decision

14.5 The Interest on Loan for generic tariff determination is as per the RE Tariff Regulations. Any change in the Interest on Loan is outside the scope of the present exercise of determination of levelled generic tariff.

**15. O & M Cost for Bagasse based Cogeneration Plants**

Commission's Proposal

15.1 As per Regulation 45 of RE Tariff Regulations, the normative O&M expenses for non-fossil fuel co-generation projects for the first year of the Control Period (FY 2020-21) is Rs. 24.52 Lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has proposed O&M cost norm for non-fossil-based co-generation projects as Rs. 26.44 lakhs per MW for FY 2022-23.

Comments Received

15.2 Tirupati Sugars Ltd submitted that Staff Salary and maintenance cost are increasing at every six months. So, the rate of escalation of O & M exp. should be 5%/annum. So, for FY 22-23, it should be Rs 27.04Lakh/MW

Analysis and Decision

15.3 The O&M escalation rate for generic tariff determination is as per the RE Tariff Regulations. Any change in the escalation is outside the scope of the present exercise of determination of levelled generic tariff.

**16. O & M Cost for Small Hydro Project**

16.1 Regulation 30 of RE Regulations provide for the normative O&M expenses for small hydro projects for the first year of the Control Period (FY 2020-21), which shall be escalated at the rate of 3.84% per annum over the tariff period for determination of the levelled tariff. Accordingly, the table below represents the O&M cost for SHP as specified by the Commission for FY 2022-23

<b>Region</b>	<b>Project Size</b>	<b>O&amp;M Expenses FY 2022-23 (Rs. Lakh/ MW)</b>
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	45.05
	5 MW to 25 MW	33.79
Other States	Below 5 MW	36.29
	5 MW to 25 MW	26.28

**Comments Received**

16.2 Venika Green Power Pvt.Ltd. suggested that considering present inflation in India O&M escalation rate should be 5.72% They have also commented that O & M expenses should be considered at least Rs.30.0 Lakhs/ MW for above 10 MW up to 25 MW.

16.3 Jaya Hydro Power Private Limited commented that O&M Expense for Projects with capacity 5MW and above is Rs.33.79 Lakh/MW and this creates anomaly because small hydro project upto 5MW capacity gets Rs 222.25 Lakh as O&M expenses for one year whereas project with capacity with higher than 5MW such as

5.2 MW capacity project gets only Rs.175.71 Lakh, which is significantly less than annual expenses allowed for projects upto 5 MW capacity. SHP upto 6.67 MW capacity gets lesser annual revenue as compared to the projects with capacity upto 5 MW. To avoid this ambiguity, it is suggested that tariff determination may be done separately for small hydro project with capacity 5MW to 6.67MW. The Tariff for projects with capacity between 5 MW to 6.67 MW should be such as project with 5MW capacity shall have tariff of Rs.5.23 per unit which should be reduced linearly to Rs. 4.76 for project capacity upto 6.67MW

### Analysis and Decision

16.4 The O&M cost for generic tariff determination is as per the RE Tariff Regulations. Any change in the cost is outside the scope of the present exercise of determination of levelled generic tariff. And also, the segregation of project capacity is as per the RE Tariff Regulations 2020. Any change in it is outside the scope of the present exercise of determination of levelled generic tariff.

## **17. CUF for Small Hydro Projects**

### Commission's Proposal

17.1 Regulation 28 of the RE Tariff Regulations specifies the norms for Capacity Utilization Factor (CUF) of units generated in a year in respect of the Small Hydro generating stations as per the details given in the table below:

<b>Small Hydro Projects</b>	<b>CUF (%)</b>
(i) Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States.	45%
(ii) Other States	30%

### Comments Received

17.2 PSPCL submitted that SHPs in Punjab are capable of achieving a CUF much higher than 30%. PSPCL requested to increase the CUF of SHP to 40% for the State of Punjab as per the PSERC Order dated 18.09.2020 in Petition No 26 of 2020 in which State Commission has decided to fix the CUF of SHPs in Punjab as 40% based on the analysis of 38 out of 41 SHPS projects in the State of Punjab.

Analysis and Decision

17.4 The CUF for generic tariff determination is as per the RE Tariff Regulations. Any change in the CUF is outside the scope of the present exercise of determination of levelled generic tariff

**18. PLF for Non-fossil Fuel based Co-generation projects**

Commission's Proposal

18.1 As regards Non-fossil Fuel based Co-generation projects, the Commission has considered PLF as specified in Regulation 40, which is given in the following Table:

<b>States</b>	<b>PLF (%)</b>
(i) Uttar Pradesh & Andhra Pradesh	45%
(ii) Tamil Nadu & Maharashtra	60%
(iii) Other States	53%

Comments Received

18.2 Tirupati Sugars Ltd commented that most of Sugar Mills operate in North Bihar and border areas of UP and share the same agricultural and weather conditions though PLF for these two states are different. So, it has requested that PLF for Bihar should also be 45% same as UP & Andhra Pradesh

Analysis and Decision

18.3 The PLF for generic tariff determination is as per the RE Tariff Regulations. Any change in the PLF is outside the scope of the present exercise of determination of levellised generic tariff

## **19. PLF for Biomass-based power projects based on Rankine cycle technology**

### Commission's Proposal

19.1 The Commission has considered the Plant Load Factor (PLF) for Biomass (Rankine Cycle) as specified in Regulations 32 of the RE Tariff Regulations as 80%.

### Comments Received

19.2 SAEL and The Hind Samachar Ltd. commented that for Biomass-based power projects based on Rankine cycle technology PLF should be 65% in the first year of operation and thereafter at 80% from the second year onwards because

- Biomass based power projects take time to stabilize
- Boiler takes longer time for stabilization and adjusting to the fuel feeding system in the first year of operation,
- high moisture content in biomass fuel, the project is bound to achieve lower PLF in the initial year
- Some efficiency loss is observed in the first year of operation

### Analysis and Decision

19.3 The PLF for generic tariff determination is as per the RE Tariff Regulations. Any change in the PLF is outside the scope of the present exercise of determination of levellised generic tariff.

## **20. Auxiliary Consumption for Bagasse based Cogeneration Plant**

### Commission's Proposal

20.1 The Commission has considered the Auxiliary Consumption as specified Regulations 41 and 52 of the RE Tariff Regulations, which is shown in the following Table:

<b>Renewable Energy Projects</b>		<b>Auxiliary Consumption (%)</b>
(i)	Non-Fossil Fuel Generation	8.50%
(ii)	Biomass Gasifier	10.00%

Comments Received

20.2 Tirupati Sugars Ltd. commented that AUX for Bagasse based Cogeneration Plants and Biomass 8.50% and 10% respectively but Electricity Consumptions as AUX consumption are equal for both the plants. So different AUX are not justified. So they have requested the Commission to consider AUX for Bagasse based Cogeneration Plants as 10%.

Analysis and Decision

20.3 The AUX for generic tariff determination is as per the RE Tariff Regulations. Any change in the AUX is outside the scope of the present exercise of determination of levellised generic tariff.

**21. Station Heat Rate for Bagasse based Cogeneration Plant**

Commission's Proposal

21.1 The Station Heat Rates (SHR) specified under Regulations 42 of the RE Tariff Regulations for non-fossil fuel based co-generation projects is 3600kCal/kWh

Comments Received

21.2 Tirupati Sugars Ltd. has requested to consider SHR for Bagasse based Cogeneration Plants to be around 3800 KCal/KWh

Analysis and Decision

21.3 The SHR for generic tariff determination is as per the RE Tariff Regulations. Any change in the SHR is outside the scope of the present exercise of determination of levellised generic tariff.



## **22. Gross Station Heat Rate for Biomass based Power Project based on Rankine Cycle Power Plant**

### Commission's Proposal

22.1 Gross Calorific Value specified under Regulation 37 of the RE Tariff Regulation for Biomass based Power Project based on Rankine Cycle Power Plant is 3100Kcal/kWh

### Comments Received

22.2 SAEL and the Hind Samachar Ltd. commented that Paddy straw procured by them are not seasonal biomass and can only be procured in the month of September-October of each year for 35- 40 days only. And then it is stored. Due to the extreme weather conditions quality of the fuel degrades and GCV also gets reduced day by day. So, they requested GCV of 2600 kcal/ kg to be considered.

### Analysis and Decision

22.3 The Gross calorific value for generic tariff determination is as per the RE Tariff Regulations. Any change in it is outside the scope of the present exercise of determination of levellised generic tariff

## **23. Depreciation**

### Commission's Proposal

23.1 Regulation 15 of the RE Tariff Regulations specifies for computation of depreciation in the following manner:

*“(1) The value base for the purpose of depreciation shall be the capital cost of the project admitted by the Commission. The salvage value of the project shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the project”*

*Provided that, no depreciation shall be allowed to the extent of grant or capital subsidy received for the project.*

*(2) Depreciation rate of 4.67% per annum shall be considered for the first 15 years and remaining depreciation shall be evenly spread during remaining*

*Useful Life of the project”*

*(3) Depreciation shall be computed from the first year of commercial operation:*

*Provided, that for determination of project specific tariff, in case of commercial operation of the project for part of the year, depreciation shall be computed on pro rata basis.”*

In accordance with the above, the rate of depreciation for the first 15 years is specified as 4.67% and the rate of depreciation from the 16<sup>th</sup> year onwards is to be spread over the balance useful life of the RE project.

#### Comments Received

23.2 Venika Green Power Ltd. Commented that Depreciation rate for 13 years should be 5.28% and remaining depreciation shall be spread over the remaining useful life of the project from 14<sup>th</sup> year onwards on 'Straight Line Method'.

#### Analysis and Decision

23.3 Depreciation for generic tariff determination is as per the RE Tariff Regulations. Any change in it is outside the scope of the present exercise of determination of levellised generic tariff.

### **24. Interest on Working Capital**

#### Commission's Proposal

24.1 As regards Interest on Working Capital, sub-regulation (2) of Regulation 17 of the RE Tariff Regulations specifies :

*(2) The Working Capital requirement in respect of biomass power projects with Rankine cycle technology, biogas power projects, biomass gasifier based power projects, non-fossil fuel based co-generation projects, municipal solid waste based power projects and refuse derived fuel based power projects shall be computed in accordance with the following*

*(a) Fuel costs for four months equivalent to normative Plant Load Factor:*

*(b) Operation and Maintenance expense for one month;*

(c) *Receivables equivalent to 45 days of tariff for sale of electricity calculated on the plant load factor; and*

(d) *Maintenance spares equivalent to 15% of Operation and Maintenance expenses.*

(3) *In case of renewable hybrid energy projects, the Working Capital requirement shall be sum of the Working Capital requirement determined as per norms applicable for renewable energy sources, in proportion to their rated capacity in the project*

(4) *Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred and fifty (350) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months.”*

#### Comments Received

24.2 SAEL and The Hind Samachar Ltd. commented that the biomass projects are bound to attract high rates of interest by lenders as compared to other RE projects such as wind or solar. SAEL and The Hind Samachar Ltd are constrained to take debt from specialized institutions like M/S PFC where interest rates range between 11.5%—12.35%. and such projects are bound to suffer from under recovery of its interest to be paid to lenders. So, they have requested to reconsider the interest rate for working capital.

#### Analysis and Decision

24.3 The IOWC for generic tariff determination is as per the RE Tariff Regulations. Any change in the IOWC is outside the scope of the present exercise of determination of levellised generic tariff.

### **25. Categorization of Biomass based Power Project**

#### *Commission's Proposal*

25.1 The Commission has categorized **Biomass Based Projects Based on Rankine Cycle Technology** into following four categories.

- i. *Project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser*

- ii. *Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser*
- iii. *Rice straw and Juliflora (plantation) based project with water cooled condenser*
- iv. *Rice straw and Juliflora (plantation) based project with air cooled condenser*

Comments Received

25.2 SAEL Limited and The Hind Samachar Limited suggested that there should be a separate sub category of Paddy Straw based biomass power projects (using Rankine Cycle) in future Regulations

Analysis and Decision

25.3 Creating sub-category of paddy straw based on biomass power projects is outside the scope of the present exercise of determination of levellised generic tariff.

26. No other comment on any other parameter has been received. Hence, the Commission determines the levellised generic tariff for RE based generating stations for FY 2022-23 as enclosed in Annexure – I to this Order.

Sd/-  
**[P. K. Singh]**  
**MEMBER**

Sd/-  
**[Arun Goyal]**  
**MEMBER**

Sd/-  
**[Indu Shekhar Jha]**  
**MEMBER**

New Delhi, 07.11.2022

**ANNEXURE 1**

**LEVELLISED GENERIC TARIFF FOR VARIOUS RENEWABLE ENERGY TECHNOLOGIES FOR FY 2022-23**

1. The levellised generic tariffs for Small Hydro projects, Biomass Power Projects with Rankine Cycle Technology, Non-fossil fuel-based co-generation Projects, Biomass Gasifier based Power Projects and Biogas based Power Projects, for FY 2022-23 are discussed in the following paragraphs.
2. For RE Projects covered under Regulation 7 of the RE Tariff Regulations, the Commission is required to determine project specific tariff. A separate petition is required to be filed by the person seeking tariff for determination of project specific tariff as per Regulation 8 of RE Tariff Regulations.

**A. Useful Life**

3. The clause (hh) of sub-Regulation (1) of Regulation 2 of the RE Tariff Regulations defines 'useful life' in relation to project, including dedicated evacuation system, from the date of commercial operation (COD) of such project, shall mean the following:

<b>Renewable Energy Projects</b>	<b>Years</b>
Small Hydro	40
Biomass power project with Rankine Cycle technology	25
Non-fossil fuel-based co-generation	25
Biomass Gasifier	25
Biogas	25

**B. Control Period**

4. Regulation 5 of the RE Tariff Regulations specifies that the Control Period for determination of tariff for renewable energy projects (RE projects) shall be from 01.07.2020 to 31.03.2023. The proviso to this regulation specifies that the tariff determined for the RE projects commissioned during the control period, shall

remain valid for the tariff period (Useful life of the project). Accordingly, the tariff determined by the Commission vide order 2/SM/2021 dated 31<sup>st</sup> March, 2021, is applicable for RE projects commissioned during second year of control period. The tariff proposed to be determined via this proposal is for the third year of the control period, which shall be applicable for the Projects commissioned during the period from 1<sup>st</sup> April, 2022 till March 31, 2023.

### **C. Tariff Structure**

5. Regulation 9 of the RE Regulations stipulates that the tariff for renewable energy sources shall consist of the following components:
  - a. Return on equity;
  - b. Interest on loan capital;
  - c. Depreciation;
  - d. Interest on working capital; and
  - e. Operation and Maintenance expenses
6. For renewable energy technologies having fuel cost component, like biomass power projects with rankine cycle technology, non-fossil fuel based cogeneration, biomass gasifier based power projects and biogas based power projects, single part tariff with two components i.e. fixed cost component and fuel cost component, is proposed to be determined.

### **D. Tariff Design**

7. 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, considering the year of commissioning of the project, for the tariff period of the project:*

*Provided that for renewable energy projects having single part tariff with two components, fixed cost component shall be determined on levellised basis considering the year of commissioning of the project while fuel cost component shall be determined on year of operation basis in the Tariff Order to be issued by the Commission.”*

**E. Levellised Tariff**

8. Levellised Tariff is proposed to be calculated by carrying out levellisation for 'useful life' of each technology considering the discount factor.

**F. Discount Factor**

9. Regulations 10(2) of the RE Tariff Regulations specifies methodology to calculate discount factor for the purpose of levellised tariff computation as under:

***“10. Tariff Design***

*... ..*

*(2) For the purpose of levellised tariff computation, discount factor equivalent to post-tax weighted average cost of capital shall be considered.”*

10. Accordingly, the discount factor considered for this exercise is equal to the post tax weighted average cost of capital on the basis of normative debt: equity ratio (70:30. Considering the normative debt equity ratio and weighted average of the post-tax rates for debt and equity component, the discount factor is calculated.
11. Interest Rate considered for the loan component (i.e.,70% of capital cost) is 9.12%. For equity component (i.e.,30% of capital cost), the rate of Return on Equity (ROE) is considered at post-tax rate of 14%. Further, Corporate tax rate has been considered as 34.94%<sup>1</sup>. Accordingly, the discount factor derived by this method for all technologies is 8.35%  $[(9.12\% \times 0.70) \times (1 - 34.94\%)] + (14.0\% \times 0.30)$

**G. Capital Cost**

12. Regulation 12 of the RE Tariff Regulations specifies as under:

***“12. Capital Cost***

*Norms for capital cost, as specified in relevant chapters of these regulations, shall be inclusive of land cost, pre-development expenses, all capital work including plant & machinery, civil work, erection, commissioning, financing cost, interest during construction, and evacuation infrastructure up to inter-connection point.”*

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<sup>1</sup>Income Tax rate of 30% + 12% surcharge on IT rate +4% Health and Education cess on IT rate and Surcharge

13. The Commission has considered the normative capital cost as specified in RE Tariff Regulations, applicable for the third year of control period i.e. FY 2022-23, for various RE technologies viz. Small Hydro Power, Biomass Power Projects based on Rankine Cycle Technology, Non-Fossil Fuel based Cogeneration Projects, Biomass Gasifier based power projects and Biogas based power projects. The capital cost of RE projects is discussed as under:

**Capital cost of Small Hydro Projects (SHP)**

14. 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 25MW.
15. Normative capital cost for small hydro projects for FY 2022-23 in accordance to Regulation 27 (1) of the RE Tariff Regulations as under:

<b>Region</b>	<b>Projects Size</b>	<b>Capital Cost (Rs.Lakh/MW)</b>
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	1100
	5 MW to 25 MW	1100
Others States	Below 5 MW	780
	5 MW to 25 MW	900

**Capital cost of Biomass based Power Projects**

16. The Commission, under Regulation 31 of the RE Tariff Regulations has specified the normative capital cost for Biomass based Power Projects for FY 2022-23, as under:



<b>Biomass Rankine Cycle Projects</b>	<b>Capital Cost (Rs lakh/ MW)</b>
Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	559
Project [other than rice straw and Juliflora(plantation) based project] with air cooled condenser	600
For rice straw and Juliflora (plantation) based project with water cooled condenser	611
For rice straw and Juliflora (plantation) based project with air cooled condenser	652

**Capital cost of Non-fossil fuel based Cogeneration Projects**

17. 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, for a project to qualify as non-fossil based co-generation project, it 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.
18. Regulation 39 of the RE Tariff Regulations has specified normative capital cost for the Non-Fossil Fuel Based Cogeneration Projects as Rs.492 lakh/MW for FY 2022-23.

**Capital cost of Biomass Gasifier Power Projects**

19. Regulation 50 of the RE Tariff Regulations has specified the normative capital cost for Biomass Gasifier power projects as Rs. 593 lakh/MW for FY 2022-23. After taking into account the capital subsidy of Rs. 150.00 lakh/MW (by Ministry of New and Renewable Energy), net project cost works out to be Rs. 443 lakh/MW for FY 2022-23.

**Capital cost of Biogas based Power Projects**

20. Regulation 56 of the RE Tariff Regulations has specified the normative capital

cost for Biogas based power projects as Rs. 1186 lakh/MW for FY 2022-23. After taking into account the capital subsidy of Rs. 300 lakh/MW (by Ministry of New and Renewable Energy), net project cost works out to be Rs. 886 lakh/MW for FY 2022-23.

21. The capital cost for FY 2022-23 in respect of the renewable energy power generating stations is summarized as following:

<b>Renewable Energy Projects</b>	<b>Net Capital Cost Norm for FY 2022-23 (Rs. lakh/MW)</b>
<b>Small Hydro</b>	
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States (Below 5 MW)	1100
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States ( 5 MW to 25 MW)	1100
Other States (Below 5 MW)	780
Other States (5 MW to 25 MW)	900
<b>Biomass Based Projects Based on Rankine Cycle Technology</b>	
Project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser	559
Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	600
Rice straw and Juliflora (plantation) based project with water cooled condenser	611
Rice straw and Juliflora (plantation) based project with air cooled condenser	652
<b>Non-fossil fuel co-generation</b>	<b>492</b>
<b>Biomass Gasifier based Power Projects</b>	<b>443</b>
<b>Biogas based Power Projects</b>	<b>886</b>

#### H. Debt-Equity Ratio

22. Sub-Regulation (1) of Regulation 13 of the RE Tariff Regulations, as stipulated below, specifies debt-equity ratio of 70:30 for determination of generic tariff

based on suo-motu petition.

23. 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 following:

<b>Renewable Energy Projects</b>	<b>Debt Amount (Rs. Lakh)</b>	<b>Equity Amount (Rs. Lakh)</b>	<b>Net Capital Cost (Rs. Lakh)</b>
<b>Small Hydro</b>			
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States. (Below 5 MW)	770.00	330.00	1,100.00
Himachal Pradesh, Uttarakhand, WestBengal, Union Territory of Jammu andKashmir, Union Territory of Ladakh andNorth Eastern States.( 5 MW to 25 MW)	770.00	330.00	1,100.00
Other States (Below 5 MW)	546.00	234.00	780.00
Other States (5 MW to 25 MW)	630.00	270.00	900.00
<b>Biomass Based Projects Based on Rankine Cycle Technology</b>			
Project [other than rice straw and Juliflora (plantation) based project] with water cooled condenser	391.30	167.70	559.00
Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	420.00	180.00	600.00
Rice straw and Juliflora (plantation) based project with water cooled condenser	427.70	183.30	611.00
Rice straw and Juliflora (plantation) based project with air cooled condenser	456.40	195.60	652.00
<b>Non-fossil fuel co-generation</b>	<b>344.40</b>	<b>147.60</b>	<b>492.00</b>
<b>Biomass Gasifier based Power Projects</b>	<b>310.10</b>	<b>132.90</b>	<b>443.00</b>

Renewable Energy Projects	Debt Amount (Rs. Lakh)	Equity Amount (Rs. Lakh)	Net Capital Cost (Rs. Lakh)
<b>Biogas based Power Projects</b>	<b>620.20</b>	<b>265.80</b>	<b>886.00</b>

**I Return on Equity**

24. As regards Rate of Return on Equity, sub-Regulation (2) of Regulation 16 of the RE Tariff Regulations specifies as under:

**“16. Return on Equity**

... ..

*(2) The normative Return on Equity shall be 14%. The normative Return on Equity shall be grossed up by the latest available notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the latest available notified Corporate Tax rate for the remaining Tariff Period.”*

25. For computation of Rate of Return on Equity, MAT Rate of 17.47% and Corporate Tax Rate of 34.94% has been considered. Accordingly, Rate of Return has been computed as 16.96% for first 20 years and 21.52% after 20 years of useful life.

**J. Interest on Loan**

26. Sub-Regulation (1) of Regulation 14 of the RE Regulations specifies the loan tenure of 15 years for the purpose of determination of generic and project specific tariff for RE projects, which is reproduced as under:

*“(a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loan for calculation for interest on loan.....*

*(b) For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months shall be considered.*

*(c) Notwithstanding any moratorium period availed by project developer, 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.”*

27. The monthly data of MCLR for the last available six months from State Bank of

India and the average MCLR is shown in following table:

Effective Date	One (1) Year Tenor MCLR rates <sup>2</sup>
15.01.2022 to 14.02.2022	7.00%
15.02.2022 to 14.03.2022	7.00%
15.03.2022 to 14.04.2022	7.00%
15.04.2022 to 14.05.2022	7.10%
15.05.2022 to 14.06.2022	7.20%
15.06.2022 to 14.07.2022	7.40%
<b>Avg. for last Available 6 months</b>	<b>7.12%</b>

28. Accordingly, interest rate for loan component is determined as 9.12%.

### K. Depreciation

29. Regulation 15 of the RE Tariff Regulations specifies for computation of depreciation in the following manner:

*“(1) The value base for the purpose of depreciation shall be the capital cost of the project admitted by the Commission. The salvage value of the project shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the capital cost of the project”*

*Provided that, no depreciation shall be allowed to the extent of grant or capital subsidy received for the project.*

*(2) Depreciation rate of 4.67% per annum shall be considered for the first 15 years and remaining depreciation shall be evenly spread during remaining Useful Life of the project”*

*(3) Depreciation shall be computed from the first year of commercial operation:*

*Provided, that for determination of project specific tariff, in case of commercial operation of the project for part of the year, depreciation shall be computed on pro rata basis.”*

30. In accordance with the above, the rate of depreciation for the first 15 years is specified as 4.67% and the rate of depreciation from the 16<sup>th</sup> year onwards is to be spread over the balance useful life of the RE project as under:

Details	Small Hydro	Biomass based	Non-Fossil Fuel cogeneration	Biomass Gasifier	Biogas
Useful Life (in years)	40	25	25	25	25
Rate of depreciation for 15 years (%)	4.67	4.67	4.67	4.67	4.67
Rate of depreciation	0.80%	2.00%	2.00%	2.00%	2.00%

<sup>2</sup>Source: <https://www.sbi.co.in/web/interest-rates/interest-rates/mclr-historical-data>

Details	Small Hydro	Biomass based	Non-Fossil Fuel cogeneration	Biomass Gasifier	Biogas
from 16 <sup>th</sup> year onwards (%)					

**L. Interest on Working Capital**

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

*“(1) The Working Capital requirement in respect of wind power projects, small hydro projects, solar PV power projects, floating solar projects, solar thermal power projects, and renewable energy with storage projects shall be computed in accordance with the following:*

- (a) Operation & Maintenance expenses for one month*
- (b) Receivables equivalent to 45 days of tariff for sale of electricity calculated on normative Capacity Utilisation Factor or Plant Load Factor, as the case may be and*
- (c) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.*

*(2) The Working Capital requirement in respect of biomass power projects with Rankine cycle technology, biogas power projects, biomass gasifier based power projects, non-fossil fuel based co-generation projects, municipal solid waste based power projects and refuse derived fuel based power projects shall be computed in accordance with the following*

- (e) Fuel costs for four months equivalent to normative Plant Load Factor;*
- (f) Operation and Maintenance expense for one month;*
- (g) Receivables equivalent to 45 days of tariff for sale of electricity calculated on the plant load factor; and*
- (h) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.*

*(3) In case of renewable hybrid energy projects, the Working Capital requirement shall be sum of the Working Capital requirement determined as per norms applicable for renewable energy sources, in proportion to their rated capacity in the project*

*(4) Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred and fifty (350) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months.”*

32. Receivables equivalent to forty five (45) days of tariff for sale of electricity calculated on the plant load factor and four months of fuel cost, (as applicable for biomass power projects with rankine cycle technology, non-fossil fuel based co-

generation projects, biomass gasifier based power projects and biogas based power projects) have been considered.

33. Interest rate has been computed as average of State Bank of India MCLR (One Year Tenor) prevalent during the last available six months plus 350 basis points (equivalent to interest rate of 10.62%).
34. The parameters considered for computation of the interest on working capital are stipulated in following table:

Details	Small Hydro	Biomass Based (Rankine Cycle), Non-Fossil Fuel Generation, Biomass Gasifier and Biogas.
<b>(a) For Fixed Charge</b>		
O&M Expenses (Month)	1 month	1 month
Maintenance Spares (%) of O&M Expenses	15%	15%
Receivables (Days)	45 Days	45 Days
<b>(b) For Variable Charge</b>		
Biomass/Bagasse Stock (Months)	-	4 month
<b>(c) Rate of Interest (%)</b>	10.62%	10.62%

**M. Operation and Maintenance Expenses**

35. Regulation 19 of the RE Tariff Regulations specifies for Operation and Maintenance Expenses (O&M expenses) in respect of RE projects as following

**" 19. Operation and Maintenance Expenses**

*(1) Operation and Maintenance expenses shall be determined for the Tariff Period of the project based on normative O&M expenses specified in these regulations for the third year of the Control Period."*

*(2) Normative O&M expenses allowed during third year of the Control Period i.e., financial year 2022-23 under these Regulations shall be escalated at the rate of 3.84% 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) **Small Hydro Projects (SHP):** Regulation 30 of RE Regulations provide for the normative O&M expenses for small hydro projects for the first year of the Control Period (FY 2020-21), which shall be escalated at the rate of 3.84% per annum over the tariff period for determination of the levellised tariff. Accordingly, the table below represents the O&M cost for SHP as specified by the Commission for FY 2022-23:

<b>Region</b>	<b>Project Size</b>	<b>O&amp;M Expenses FY 2022-23 (Rs. Lakh/ MW)</b>
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	45.05
	5 MW to 25 MW	33.79
Other States	Below 5 MW	36.29
	5 MW to 25 MW	26.28

- (b) **Biomass power projects with Rankine cycle technology:** Regulation 35 of RE Tariff Regulations provides that the normative O& M expenses for Biomass-based projects for first year of the Control Period (FY 2020-21) is Rs. 46.42 Lakh per MW which shall be escalated at the rate of 3.84%per annum over the tariff period. Accordingly, the Commission has proposed O&M cost norm for Biomass-based projects as Rs. 50.05 lakh per MW for FY 2022-23.

- (c) **Non-Fossil Fuel Cogeneration:** As per Regulation 45 of RE Tariff Regulations, the normative O&M expenses for non-fossil fuel co-generation projects for the first year of the Control Period (FY 2020-21) is Rs. 24.52 Lakh per MW which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has proposed O&M cost norm for non-fossil based co-generation projects as



Rs. 26.44 lakhs per MW for FY 2022-23.

**(d) Biomass Gasifier based power projects :** As per Regulation 54 of the RE Tariff Regulations, normative O&M expenses for Biomass Gasifier power projects is Rs. 61.31 lakh/MW for the first year of Control Period (FY 2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the Commission has proposed O&M cost norm for Biomass Gasifier based power projects such as Rs. 66.11 lakh per MW for FY 2022-23.

**(e) Biogas:** As per Regulation 59 of the RE Tariff Regulations, normative O&M expenses for such projects is biogas Rs. 61.31Lakh/MW for the first year of Control Period (FY2020-21) which shall be escalated at the rate of 3.84% per annum over the tariff period. Accordingly, the commission has proposed O&M expense norm for such projects as Rs. 66.11 Lakh per MW for FY 2022-23.

37. The Commission has considered the normative O&M Expenses as specified in RE Tariff Regulations for different RE technologies as stated above.

**N. Capacity Utilisation factor (CUF)/Plant Load Factor (PLF)**

38. Regulation 18 of the RE Tariff Regulations, as extracted below, specifies number of hours for calculation of CUF/PLF as 8766.

*“The number of hours in a year for calculation of capacity utilization factor and plant load factor, as the case may be, shall be considered as 8766.”*

39. Regulation 28 of the RE Tariff Regulations specifies the norms for Capacity Utilization Factor (CUF) of units generated in a year in respect of the Small Hydro generating stations as per the details given in the table below:

Small Hydro Projects	CUF (%)
(iii)Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States.	45%
(iv) Other States	30%

40. Further, the Commission has considered the Plant Load Factor (PLF) for Biomass (Rankine Cycle), Biomass Gasifier, and Biogas based renewable energy generating stations as specified in Regulations 32, 51 and 57 of the RE Tariff Regulations, which are given in the following table:

<b>Renewable Energy Projects</b>	<b>PLF (%)</b>
(i) Biomass Based (Rankine Cycle)	80%
(ii) Biomass Gasifier	85%
(iii) Biogas	90%

41. Further, as regards Non-fossil Fuel based Co-generation projects, the Commission has considered PLF as specified in Regulation 40, which is given in the following Table:

<b>States</b>	<b>PLF (%)</b>
(iv) Uttar Pradesh & Andhra Pradesh	45%
(v) Tamil Nadu & Maharashtra	60%
(vi) Other States	53%

**O. Auxiliary Consumption**

42. The Commission has considered the Auxiliary Consumption as specified Regulations 29, 33, 41, 52 and 58 of the RE Tariff Regulations, which is shown in the following Table:

<b>Renewable Energy Projects</b>	<b>Auxiliary Consumption (%)</b>
(iii) Small Hydro	1.00%
(iv) Biomass Based Projects	
a) Using Water Cooled Condenser	10.00%
b) Using Air Cooled Condenser	12.00%

Renewable Energy Projects	Auxiliary Consumption (%)
(v) Non-Fossil Fuel Generation	8.50%
(vi) Biomass Gasifier	10.00%
(vii) Biogas based	12.00%

**P. Station Heat Rate**

43. The Station Heat Rates (SHR) specified under Regulations 34 and 42 of the RE Tariff Regulations for biomass power projects with rankine cycle technology and non-fossil fuel based co-generation projects are as under:

Renewable Energy Projects	SHR (kcal/Kwh)
Biomass based	(a) 4200: For projects using travelling grate boilers (b) 4125: For Projects using AFBC boilers
Non-Fossil Fuel based Cogeneration	3600

**Q. Fuel Parameters**

**(a) Fuel Mix**

44. Regulation 53 of the RE Tariff Regulations specifies that the normative specific fuel consumption shall be 1.25 kg per kWh for Biomass Gasifier based power project.
45. Also, Regulation 60 of the RE Tariff Regulations specifies that the normative specific fuel consumption shall be 3 kg of substrate mix per kWh for Biogas based power project.
46. The Commission has considered the fuel mix for Biomass Gasifier based power project and Biogas based power projects as specified above.

**(b) Calorific Value**

47. The Commission has considered the calorific value for biomass fuel used as

3100 kcal/kg as per Regulation 37 of the RE Tariff Regulations.

48. Also, the gross calorific value for bagasse in case of non-fossil fuel co-generation projects has been considered as 2250 kCal/kgas per Regulation 43 of RE Tariff Regulations, and for the use of biomass fuels other than bagasse, the calorific value as specified in above Para shall be applicable.

**(c) Fuel Cost**

49. The Commission, as per Regulation 38 of the RE Tariff Regulations, has specified the Biomass fuel price for third year of the Control Period (i.e. FY 2022-23) in the table below. The fuel prices have been derived by escalating the notified prices of first year of control period by 5%. For each subsequent year of the Tariff Period, a normative escalation factor of 5% per annum shall be applicable, unless reviewed and ordered otherwise by the Commission.

<b>States</b>	<b>Biomass Price for FY 2021-22 (Rs/ MT)</b>	<b>Biomass Price for FY 2022-23 (Rs/ MT)</b>
Andhra Pradesh	3492.3	3666.92
Haryana	3975.3	4174.07
Maharashtra	4065.6	4268.88
Punjab	4158	4365.90
Rajasthan	3470.25	3643.76
Tamil Nadu	3435.6	3607.38
Telangana	3492.3	3666.92
Uttar Pradesh	3553.2	3730.86
Other States	3734.85	3921.59

50. The Commission, as per Regulation 44 (1) of the RE Tariff Regulations, has specified the Bagasse fuel price during third year of the Control Period (i.e. FY 2022-23) in the following table. The fuel prices have been derived by escalating the notified prices of first year of control period by 5%. For each subsequent year of the Tariff Period, a normative escalation factor of 5% per annum shall be applicable, unless reviewed and ordered otherwise by the Commission.

<b>States</b>	<b>Bagasse Price for FY 2021-22 (Rs/ MT)</b>	<b>Bagasse Price for FY 2022-23 (Rs/ MT)</b>
Andhra Pradesh	1971.90	2070.50
Haryana	2804.55	2944.78
Maharashtra	2763.60	2901.78
Punjab	2468.55	2591.98
Tamil Nadu	2124.15	2230.36
Telangana	1970.85	2069.39
Uttar Pradesh	2199.75	2309.74
Other States	2387.7	2507.09

51. As per Regulation 55 of the RE Tariff Regulations, the biomass fuel price for Biomass gasifier based power projects applicable for FY 2022-23 shall be the same as for biomass based power projects based on Rankine cycle technology, as determined in accordance with Regulation 38 and proposed in Clause 49 of this Order
52. Regulation 61 of the RE Tariff Regulations has specified the feed stock price for Biogas based power projects during first year of the Control Period (FY 2020-21) at Rs.1422/MT. For each subsequent year of the Tariff Period, a normative escalation factor of 5% per annum shall be applicable, unless reviewed and ordered otherwise by the Commission. For third year of the Control Period (FY 2022-23), the Commission specified the feed stock price for Biogas based power projects as Rs 1567.176 /MT (5% escalation over last year price).

**R. Subsidy or Incentives by State/Central Government**

53. Regulation 22 (1) of the RE Tariff Regulations provides as under:

*"The Commission shall take into consideration any incentive, grant or subsidy from the Central or State Government, including accelerated depreciation benefit if availed by the project 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."*

*"1) Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate and corporate income tax rate as per relevant provisions under Income Tax Act as amended from time to time*

*2) Capitalization of Renewable energy projects during second half of the fiscal year*

*3) Per unit benefit shall be derived on levelled basis at discount factor equivalent to weighted average cost of capital"*

54. Capital subsidy provided by the Government as per prevailing scheme/policy has already been considered, while considering the capital cost of the project.
55. In terms of the above regulation, for the projects availing the benefit of accelerated depreciation, an applicable Corporate tax rate of 34.94% 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 Act i.e. 40% of the written down value method. Moreover, additional 20% depreciation in the initial year is proposed to be extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (iia) of the Income Tax Act.
56. Depreciation for the first year has been calculated at the rate of 50% of accelerated depreciation (40%) and 50% of additional depreciation (20%) (as project is capitalized during the second half of the financial year as per proviso to sub regulation (1) of Regulation 22). Income tax benefits of accelerated depreciation and additional depreciation have 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. Accelerated depreciation benefit has been computed as per existing provisions of Income Tax Act.
57. In the light of the discussion made in the preceding paragraphs, the generic tariffs of different RE projects for the financial year 2022-23 have been arrived at and are proposed as follows:

**GENERIC TARIFF FOR RE TECHNOLOGIES FOR FY 2022-23**

58. The Generic Tariff for RE Technologies computed for FY 2022-23 is shown in the subsequent Tables:

Particulars	Levelling Total Tariff (FY 2022-23) (Rs/kWh)
<b>Small Hydro Power Project</b>	
Himachal Pradesh, Uttarakhand, West Bengal, North Eastern States and Union Territories of Jammu and Kashmir & Ladakh. (Below 5 MW)	5.23
Himachal Pradesh, Uttarakhand, West Bengal, North Eastern States and Union Territories of Jammu and Kashmir & Ladakh. (5 MW to 25 MW)	4.76
Others States (Below 5 MW)	5.84
Others States (5 MW to 25 MW)	5.76

<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and travelling grate boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.70	5.52	8.22	0.11	8.10
Haryana	2.75	6.28	9.04	0.11	8.93
Maharashtra	2.77	6.43	9.19	0.11	9.08
Punjab	2.78	6.57	9.35	0.11	9.24
Rajasthan	2.69	5.49	8.18	0.11	8.07
Tamil Nadu	2.69	5.43	8.12	0.11	8.01
Telangana	2.69	5.52	8.22	0.11	8.10
UP	2.70	5.62	8.32	0.11	8.21
Others	2.73	5.90	8.63	0.11	8.52

<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and travelling grate boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)

	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	availed) (Rs/kWh)
AP	2.84	5.65	8.49	0.12	8.36
Haryana	2.90	6.43	9.33	0.12	9.20
Maharashtra	2.91	6.57	9.48	0.12	9.36
Punjab	2.92	6.72	9.65	0.12	9.52
Rajasthan	2.84	5.61	8.45	0.12	8.32
Tamil Nadu	2.83	5.55	8.39	0.12	8.26
Telangana	2.84	5.65	8.49	0.12	8.36
UP	2.85	5.74	8.59	0.12	8.47
Others	2.87	6.04	8.91	0.12	8.79

<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and travelling grate boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.80	5.52	8.32	0.12	8.20
Haryana	2.86	6.28	9.14	0.12	9.02
Maharashtra	2.87	6.43	9.30	0.12	9.17
Punjab	2.88	6.57	9.45	0.12	9.33
Rajasthan	2.80	5.49	8.28	0.12	8.16
Tamil Nadu	2.79	5.43	8.22	0.12	8.10
Telangana	2.80	5.52	8.32	0.12	8.20
UP	2.81	5.62	8.42	0.12	8.30
Others	2.83	5.90	8.73	0.12	8.61

<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and travelling grate boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.95	5.65	8.59	0.13	8.46
Haryana	3.00	6.43	9.43	0.13	9.30
Maharashtra	3.02	6.57	9.59	0.13	9.46



Punjab	3.03	6.72	9.75	0.13	9.62
Rajasthan	2.94	5.61	8.55	0.13	8.42
Tamil Nadu	2.94	5.55	8.49	0.13	8.36
Telangana	2.94	5.65	8.59	0.13	8.45
UP	2.95	5.74	8.70	0.13	8.56
Others	2.98	6.04	9.02	0.13	8.88

<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and AFBC boiler</b>					
<b>State</b>	<b>Levellised Fixed Cost</b>	<b>Variable Cost (FY 2022-23)</b>	<b>Applicable Tariff Rates (FY 2022-23)</b>	<b>Benefit of Accelerated Depreciation (if availed)</b>	<b>Net levellised tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)</b>
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.69	5.42	8.11	0.11	8.00
Haryana	2.75	6.17	8.92	0.11	8.81
Maharashtra	2.76	6.31	9.07	0.11	8.96
Punjab	2.77	6.45	9.22	0.11	9.11
Rajasthan	2.69	5.39	8.07	0.11	7.96
Tamil Nadu	2.68	5.33	8.02	0.11	7.90
Telangana	2.69	5.42	8.11	0.11	8.00
UP	2.70	5.52	8.21	0.11	8.10
Others	2.72	5.80	8.52	0.11	8.40

<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and AFBC boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.83	5.54	8.38	0.12	8.25
Haryana	2.89	6.31	9.20	0.12	9.08
Maharashtra	2.90	6.45	9.36	0.12	9.24
Punjab	2.91	6.60	9.52	0.12	9.39
Rajasthan	2.83	5.51	8.34	0.12	8.22
Tamil Nadu	2.83	5.45	8.28	0.12	8.16
Telangana	2.83	5.54	8.38	0.12	8.25
UP	2.84	5.64	8.48	0.12	8.36
Others	2.86	5.93	8.79	0.12	8.67

<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and AFBC boiler</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levelling tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.79	5.42	8.21	0.12	8.09
Haryana	2.85	6.17	9.02	0.12	8.90
Maharashtra	2.86	6.31	9.17	0.12	9.05
Punjab	2.87	6.45	9.33	0.12	9.20
Rajasthan	2.79	5.39	8.18	0.12	8.05
Tamil Nadu	2.79	5.33	8.12	0.12	8.00
Telangana	2.79	5.42	8.21	0.12	8.09
UP	2.79	5.52	8.32	0.12	8.19
Others	2.82	5.80	8.62	0.12	8.50

<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and AFBC boiler</b>					
State	Levellised Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levellised tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.94	5.54	8.48	0.13	8.35
Haryana	3.00	6.31	9.31	0.13	9.18
Maharashtra	3.01	6.45	9.46	0.13	9.33
Punjab	3.02	6.60	9.62	0.13	9.49
Rajasthan	2.94	5.51	8.45	0.13	8.31
Tamil Nadu	2.93	5.45	8.39	0.13	8.25
Telangana	2.94	5.54	8.48	0.13	8.35
UP	2.95	5.64	8.59	0.13	8.45
Others	2.97	5.93	8.90	0.13	8.76

<b>Bagasse Based Co-generation Project</b>					
State	Levellised Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levellised tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.98	3.62	6.60	0.16	6.43
Haryana	2.69	5.15	7.84	0.14	7.70
Maharashtra	2.41	5.07	7.49	0.12	7.36
Punjab	2.64	4.53	7.17	0.14	7.03
Tamil Nadu	2.32	3.90	6.22	0.12	6.10
Telangana	2.57	3.62	6.19	0.14	6.05
UP	3.01	4.04	7.05	0.16	6.88
Others	2.63	4.38	7.01	0.14	6.87

<b>Biomass Gasifier Power Project</b>					
State	Levellised Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levellised tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)	(Rs/kWh)
AP	2.66	5.09	7.75	0.08	7.67

<b>Biomass Gasifier Power Project</b>					
State	Levelling Fixed Cost	Variable Cost (FY 2022-23)	Applicable Tariff Rates (FY 2022-23)	Benefit of Accelerated Depreciation (if availed)	Net levellised tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)
Haryana	2.71	5.80	8.51	0.08	8.43
Maharashtra	2.72	5.93	8.65	0.08	8.57
Punjab	2.73	6.06	8.80	0.08	8.71
Rajasthan	6.65	5.06	7.72	0.08	7.63
Tamil Nadu	2.65	5.01	7.66	0.08	7.58
Telangana	2.66	5.09	7.75	0.08	7.67
UP	2.67	5.18	7.85	0.08	7.76
Others	2.69	5.45	8.13	0.08	8.05
<b>Biogas based generation</b>					
Biogas	3.40	5.34	8.75	0.16	8.59

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

<b>Sl.No.</b>	<b>Renewable Energy Projects</b>	<b>Annexure</b>
A	<b>Small Hydro Power Projects</b>	
	<i>Projects Less than 5 MW for HP, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh and NE States</i>	<i>Annexure 1A</i>
	<i>Projects between 5 MW and 25 MW for HP, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh and NE States</i>	<i>Annexure 1B</i>
	<i>Projects less than 5 MW for other States</i>	<i>Annexure 1C</i>
	<i>Projects between 5 MW and 25 MW for other states</i>	<i>Annexure 1D</i>
B.1	<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and using Travelling Grate</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.1A</i>
	<i>Haryana</i>	<i>Annexure 2.1B</i>
	<i>Maharashtra</i>	<i>Annexure 2.1C</i>
	<i>Punjab</i>	<i>Annexure 2.1D</i>
	<i>Rajasthan</i>	<i>Annexure 2.1E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.1F</i>
	<i>Telangana</i>	<i>Annexure 2.1G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.1H</i>
	<i>Others</i>	<i>Annexure 2.1I</i>
B.2	<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Air</b>	

<b>Sl.No.</b>	<b>Renewable Energy Projects</b>	<b>Annexure</b>
	<b>Cooled Condenser and using Travelling Grate boiler</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.2A</i>
	<i>Haryana</i>	<i>Annexure 2.2B</i>
	<i>Maharashtra</i>	<i>Annexure 2.2C</i>
	<i>Punjab</i>	<i>Annexure 2.2D</i>
	<i>Rajasthan</i>	<i>Annexure 2.2E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.2F</i>
	<i>Telangana</i>	<i>Annexure 2.2G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.2H</i>
	<i>Others</i>	<i>Annexure 2.2I</i>
B.3	<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and using Travelling Grate boiler</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.3A</i>
	<i>Haryana</i>	<i>Annexure 2.3B</i>
	<i>Maharashtra</i>	<i>Annexure 2.3C</i>
	<i>Punjab</i>	<i>Annexure 2.3D</i>
	<i>Rajasthan</i>	<i>Annexure 2.3E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.3F</i>
	<i>Telangana</i>	<i>Annexure 2.3G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.3H</i>
	<i>Others</i>	<i>Annexure 2.3I</i>
B.4	<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using Travelling Grate boiler</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.4A</i>
	<i>Haryana</i>	<i>Annexure 2.4B</i>
	<i>Maharashtra</i>	<i>Annexure 2.4C</i>
	<i>Punjab</i>	<i>Annexure 2.4D</i>
	<i>Rajasthan</i>	<i>Annexure 2.4E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.4F</i>
	<i>Telangana</i>	<i>Annexure 2.4G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.4H</i>
	<i>Others</i>	<i>Annexure 2.4I</i>
B.5	<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with</b>	

<b>Sl.No.</b>	<b>Renewable Energy Projects</b>	<b>Annexure</b>
	<b>Water Cooled Condenser and using AFBC boiler</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.5A</i>
	<i>Haryana</i>	<i>Annexure 2.5B</i>
	<i>Maharashtra</i>	<i>Annexure 2.5C</i>
	<i>Punjab</i>	<i>Annexure 2.5D</i>
	<i>Rajasthan</i>	<i>Annexure 2.5E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.5F</i>
	<i>Telangana</i>	<i>Annexure 2.5G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.5H</i>
	<i>Others</i>	<i>Annexure 2.5I</i>
B.6	<b>Biomass Power Projects [other than Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.6A</i>
	<i>Haryana</i>	<i>Annexure 2.6B</i>
	<i>Maharashtra</i>	<i>Annexure 2.6C</i>
	<i>Punjab</i>	<i>Annexure 2.6D</i>
	<i>Rajasthan</i>	<i>Annexure 2.6E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.6F</i>
	<i>Telangana</i>	<i>Annexure 2.6G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.6H</i>
	<i>Others</i>	<i>Annexure 2.6I</i>
B.7	<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Water Cooled Condenser and using AFBC boiler</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 2.7A</i>
	<i>Haryana</i>	<i>Annexure 2.7B</i>
	<i>Maharashtra</i>	<i>Annexure 2.7C</i>
	<i>Punjab</i>	<i>Annexure 2.7D</i>
	<i>Rajasthan</i>	<i>Annexure 2.7E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.7F</i>
	<i>Telangana</i>	<i>Annexure 2.7G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.7H</i>
	<i>Others</i>	<i>Annexure 2.7I</i>
B.8	<b>Biomass Power Projects [Rice Straw and Juliflora (plantation) based project] with Air Cooled Condenser and using AFBC boiler</b>	

<b>Sl.No.</b>	<b>Renewable Energy Projects</b>	<b>Annexure</b>
	<i>Andhra Pradesh</i>	<i>Annexure 2.8A</i>
	<i>Haryana</i>	<i>Annexure 2.8B</i>
	<i>Maharashtra</i>	<i>Annexure 2.8C</i>
	<i>Punjab</i>	<i>Annexure 2.8D</i>
	<i>Rajasthan</i>	<i>Annexure 2.8E</i>
	<i>Tamil Nadu</i>	<i>Annexure 2.8F</i>
	<i>Telangana</i>	<i>Annexure 2.8G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 2.8H</i>
	<i>Others</i>	<i>Annexure 2.8I</i>
<b>C</b>	<b>Non-Fossil Fuel Based Cogeneration</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 3A</i>
	<i>Haryana</i>	<i>Annexure 3B</i>
	<i>Maharashtra</i>	<i>Annexure 3C</i>
	<i>Punjab</i>	<i>Annexure 3D</i>
	<i>Tamil Nadu</i>	<i>Annexure 3E</i>
	<i>Telangana</i>	<i>Annexure 3F</i>
	<i>Uttar Pradesh</i>	<i>Annexure 3G</i>
	<i>Others</i>	<i>Annexure 3H</i>
<b>D</b>	<b>Biomass Gasifier Power Projects</b>	
	<i>Andhra Pradesh</i>	<i>Annexure 4A</i>
	<i>Haryana</i>	<i>Annexure 4B</i>
	<i>Maharashtra</i>	<i>Annexure 4C</i>
	<i>Punjab</i>	<i>Annexure 4D</i>
	<i>Rajasthan</i>	<i>Annexure 4E</i>
	<i>Tamil Nadu</i>	<i>Annexure 4F</i>
	<i>Telangana</i>	<i>Annexure 4G</i>
	<i>Uttar Pradesh</i>	<i>Annexure 4H</i>
	<i>Others</i>	<i>Annexure 4I</i>
<b>E</b>	<b>Biogas Power Projects</b>	<i>Annexure 5A</i>

CERC RE Tariff Order for FY 2022-23

Annexure 1A						
Assumption for Small Hydro based Project Parameters: Himachal Pradesh, Uttarakhand, WB, UT of J&K, Ladakh, North Eastern States <=5MW						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Capacity Utilization Factor	%	45%	
			Auxiliary Consumption	%	1.00%	
			Useful Life	Years	40	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	1100.00	
3	Sources of Fund	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	770.00	
			Total Equity Amount	Rs Lakh	330.00	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	770.00
			Moratorium Period	years	0	
			Repayment Period	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lacs	330.00
			Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (after 20 years)	% p.a	21.52%				
Discount Rate		8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	0.80%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			Interest On Working Capital	%	10.62%	
6	Operation & Maintenance	O&M Cost of power plant		Rs Lakh	45.05	
			Total O & M Expenses Escalation	%	3.84%	
7	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Small Hydro 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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
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	1	1	1	1	
Net Generation	MU		3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91

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	36	37	38	39	40			
O&M Expenses	Rs Lakh		45.05	46.78	48.58	50.44	52.38	54.39	56.46	58.65	60.90	63.24	65.67	68.19	70.81	73.53	76.35	79.28	82.33	85.49	88.77	92.16	95.72	99.39	103.21	107.17	111.29	115.56	120.00	124.61	129.39	134.36	139.52	144.88	150.44	156.22	162.22	168.45	174.91	181.63	188.61	195.85			
Depreciation	Rs Lakh		51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	
Interest on term loan	Rs Lakh		67.86	63.18	58.50	53.82	49.14	44.46	39.78	35.10	30.42	25.74	21.06	16.38	11.70	7.02	2.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		4.09	4.10	4.10	4.11	4.12	4.14	4.16	4.18	4.20	4.23	4.26	4.29	4.33	4.37	4.42	3.93	4.05	4.17	4.29	4.43	4.76	4.91	5.05	5.21	5.36	5.53	5.70	5.88	6.06	6.25	6.45	6.66	6.87	7.10	7.33	7.57	7.82	8.08	8.35	8.62			
Return on Equity	Rs Lakh		55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	71.02	
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>224.32</b>	<b>221.37</b>	<b>218.50</b>	<b>215.69</b>	<b>212.96</b>	<b>210.30</b>	<b>207.73</b>	<b>205.24</b>	<b>202.84</b>	<b>200.52</b>	<b>198.30</b>	<b>196.18</b>	<b>194.15</b>	<b>192.23</b>	<b>190.42</b>	<b>147.99</b>	<b>151.15</b>	<b>154.43</b>	<b>157.84</b>	<b>161.38</b>	<b>180.30</b>	<b>184.11</b>	<b>188.08</b>	<b>192.19</b>	<b>196.47</b>	<b>200.91</b>	<b>205.52</b>	<b>210.30</b>	<b>215.27</b>	<b>220.43</b>	<b>225.79</b>	<b>231.35</b>	<b>237.13</b>	<b>243.13</b>	<b>249.36</b>	<b>255.83</b>	<b>262.55</b>	<b>269.52</b>	<b>276.77</b>	<b>284.29</b>			

### Levillised tariff corresponding to Useful life

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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40			
O&M expn	Rs/kWh	<b>1.82</b>	1.15	1.20	1.24	1.29	1.34	1.39	1.45	1.50	1.56	1.62	1.68	1.75	1.81	1.88	1.96	2.03	2.11	2.19	2.27	2.36	2.45	2.55	2.64	2.74	2.85	2.96	3.07	3.19	3.31	3.44	3.57	3.71	3.85	4.00	4.15	4.31	4.48	4.65	4.83	5.02			
Depreciation	Rs/kWh	<b>1.02</b>	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	
Int. on term loan	Rs/kWh	<b>0.78</b>	1.74	1.62	1.50	1.38	1.26	1.14	1.02	0.90	0.78	0.66	0.54	0.42	0.30	0.18	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	0.00	0.00	0.00	0.00
Int. on working capital	Rs/kWh	<b>0.11</b>	0.10	0.10	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.11	0.11	0.11	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.19	0.20	0.21	0.21	0.22			
RoE	Rs/kWh	<b>1.50</b>	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	
<b>Total COG</b>	<b>Rs/kWh</b>	<b>5.23</b>	<b>5.74</b>	<b>5.67</b>	<b>5.59</b>	<b>5.52</b>	<b>5.45</b>	<b>5.39</b>	<b>5.32</b>	<b>5.26</b>	<b>5.19</b>	<b>5.13</b>	<b>5.08</b>	<b>5.02</b>	<b>4.97</b>	<b>4.92</b>	<b>4.88</b>	<b>3.79</b>	<b>3.87</b>	<b>3.95</b>	<b>4.04</b>	<b>4.13</b>	<b>4.62</b>	<b>4.71</b>	<b>4.82</b>	<b>4.92</b>	<b>5.03</b>	<b>5.14</b>	<b>5.26</b>	<b>5.39</b>	<b>5.51</b>	<b>5.64</b>	<b>5.78</b>	<b>5.92</b>	<b>6.07</b>	<b>6.23</b>	<b>6.39</b>	<b>6.55</b>	<b>6.72</b>	<b>6.90</b>	<b>7.09</b>	<b>7.28</b>			

<b>Levillised Tariff</b>	<b>5.23</b>	Rs/Unit
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**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 1B</b>					
<b>Assumption for Small Hydro based Project Parameters : Himachal Pradesh, Uttarakhand, WB, UT of J&amp;K, Ladakh, North Eastern States - &gt;5 MW upto 25MW</b>					
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Capacity Utilization Factor	%	45%
			Auxiliary Consumption	%	1.00%
			Useful Life	Years	40
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	1100.00
<b>3</b>	<b>Sources of Fund</b>	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	770.00
			Total Equity Amount	Rs Lakh	330.00
		<u>Debt Component</u>	Loan Amount	Rs Lakh	770.00
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lacs	330.00
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax
	MAT Rate			%	17.47%
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%
	Depreciation Rate 16th year onwards			%	0.80%
<b>5</b>	<b>Working Capital</b>			<u>For Fixed Charges</u>	
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15.00%
		Receivables for Debtors		Months	1.5
		Interest On Working Capital		%	10.62%
<b>6</b>	<b>Operation &amp; Maintenance</b>	O&M Cost of power plant		Rs Lakh	33.79
		Total O & M Expenses Escalation		%	3.84%
<b>7</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Small Hydro 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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
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	1	1	1	1	1	
Net Generation	MU		3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91

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	36	37	38	39	40			
O&M Expenses	Rs Lakh		33.79	35.09	36.44	37.84	39.29	40.80	42.37	43.99	45.68	47.44	49.26	51.15	53.11	55.15	57.27	59.47	61.75	64.13	66.59	69.14	71.80	74.56	77.42	80.39	83.48	86.69	90.01	93.47	97.06	100.79	104.66	108.68	112.85	117.18	121.68	126.35	131.21	136.25	141.48	146.91			
Depreciation	Rs Lakh		51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	51.33	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	8.80	
Interest on term loan	Rs Lakh		67.86	63.18	58.50	53.82	49.14	44.46	39.78	35.10	30.42	25.74	21.06	16.38	11.70	7.02	2.34	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		3.66	3.65	3.64	3.63	3.62	3.61	3.61	3.61	3.61	3.62	3.63	3.64	3.65	3.66	3.68	3.16	3.25	3.34	3.44	3.54	3.84	3.95	4.06	4.17	4.29	4.42	4.54	4.68	4.82	4.96	5.11	5.26	5.42	5.59	5.77	5.95	6.13	6.33	6.53	6.74			
Return on Equity	Rs Lakh		55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98	55.98
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>212.63</b>	<b>209.23</b>	<b>205.89</b>	<b>202.60</b>	<b>199.37</b>	<b>196.19</b>	<b>193.07</b>	<b>190.02</b>	<b>187.03</b>	<b>184.11</b>	<b>181.26</b>	<b>178.48</b>	<b>175.78</b>	<b>173.15</b>	<b>170.61</b>	<b>127.42</b>	<b>129.79</b>	<b>132.25</b>	<b>134.81</b>	<b>137.46</b>	<b>155.46</b>	<b>158.32</b>	<b>161.29</b>	<b>164.38</b>	<b>167.59</b>	<b>170.92</b>	<b>174.37</b>	<b>177.96</b>	<b>181.69</b>	<b>185.56</b>	<b>189.58</b>	<b>193.76</b>	<b>198.09</b>	<b>202.59</b>	<b>207.26</b>	<b>212.12</b>	<b>217.16</b>	<b>222.39</b>	<b>227.82</b>	<b>233.46</b>			

### Levelised tariff corresponding to Useful life

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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
O&M expn	Rs/kWh	<b>1.36</b>	0.87	0.90	0.93	0.97	1.01	1.04	1.08	1.13	1.17	1.21	1.26	1.31	1.36	1.41	1.47	1.52	1.58	1.64	1.71	1.77	1.84	1.91	1.98	2.06	2.14	2.22	2.30	2.39	2.49	2.58	2.68	2.78	2.89	3.00	3.12	3.24	3.36	3.49	3.62	3.76		
Depreciation	Rs/kWh	<b>1.02</b>	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	
Int. on term loan	Rs/kWh	<b>0.78</b>	1.74	1.62	1.50	1.38	1.26	1.14	1.02	0.90	0.78	0.66	0.54	0.42	0.30	0.18	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	0.00	0.00	0.00
Int. on working capital	Rs/kWh	<b>0.10</b>	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.08	0.09	0.09	0.09	0.10	0.10	0.10	0.11	0.11	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.17		
RoE	Rs/kWh	<b>1.50</b>	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.43	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82
<b>Total COG</b>	<b>Rs/kWh</b>	<b>4.76</b>	<b>5.44</b>	<b>5.36</b>	<b>5.27</b>	<b>5.19</b>	<b>5.11</b>	<b>5.02</b>	<b>4.94</b>	<b>4.87</b>	<b>4.79</b>	<b>4.71</b>	<b>4.64</b>	<b>4.57</b>	<b>4.50</b>	<b>4.43</b>	<b>4.37</b>	<b>3.26</b>	<b>3.32</b>	<b>3.39</b>	<b>3.45</b>	<b>3.52</b>	<b>3.98</b>	<b>4.05</b>	<b>4.13</b>	<b>4.21</b>	<b>4.29</b>	<b>4.38</b>	<b>4.47</b>	<b>4.56</b>	<b>4.65</b>	<b>4.75</b>	<b>4.85</b>	<b>4.96</b>	<b>5.07</b>	<b>5.19</b>	<b>5.31</b>	<b>5.43</b>	<b>5.56</b>	<b>5.69</b>	<b>5.83</b>	<b>5.98</b>		

<b>Levelised Tariff</b>	<b>4.76</b>	<b>Rs/Unit</b>
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**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 1C</b>							
<b>Assumption for Small Hydro based Project Parameters: Other States - &lt;= 5 MW</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Other States - &lt;= 5 MW</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Capacity Utilization Factor	%	30%		
			Auxiliary Consumption	%	1.00%		
			Useful Life	Years	40		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	780.00		
<b>3</b>	<b>Sources of Fund</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs. Lakh	546.00		
			Total Equity Amount	Rs Lakh	234.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	546.00	
				Moratorium Period	years	0	
				Repayment Period	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lacs	234.00
					Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%		
			Discount Rate		8.35%		
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	0.80%		
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
		Interest On Working Capital		%	10.62%		
<b>6</b>	<b>Operation &amp; Maintenance</b>		O&M Cost of power plant	Rs Lakh	36.29		
			Total O & M Expenses Escalation	%	3.84%		
<b>7</b>	<b>Generation &amp; Sale of Energy</b>		Total No .Of Hours	Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Small Hydro 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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
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	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	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	36	37	38	39	40		
O&M Expenses	Rs Lakh		36.29	37.69	39.14	40.64	42.20	43.82	45.50	47.25	49.06	50.95	52.90	54.94	57.05	59.24	61.51	63.87	66.33	68.87	71.52	74.26	77.11	80.08	83.15	86.34	89.66	93.10	96.68	100.39	104.24	108.25	112.40	116.72	121.20	125.86	130.69	135.71	140.92	146.33	151.95	157.79		
Depreciation	Rs Lakh		36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	36.40	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	
Interest on term loan	Rs Lakh		48.12	44.80	41.48	38.16	34.85	31.53	28.21	24.89	21.57	18.25	14.93	11.62	8.30	4.98	1.66	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		3.07	3.08	3.09	3.10	3.12	3.14	3.16	3.18	3.21	3.23	3.26	3.30	3.33	3.37	3.42	3.08	3.18	3.27	3.38	3.48	3.73	3.85	3.97	4.09	4.22	4.35	4.49	4.63	4.78	4.93	5.10	5.26	5.43	5.61	5.80	5.99	6.19	6.40	6.62	6.84		
Return on Equity	Rs Lakh		39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>163.58</b>	<b>161.66</b>	<b>159.80</b>	<b>158.00</b>	<b>156.26</b>	<b>154.58</b>	<b>152.96</b>	<b>151.41</b>	<b>149.94</b>	<b>148.53</b>	<b>147.20</b>	<b>145.94</b>	<b>144.77</b>	<b>143.68</b>	<b>142.68</b>	<b>141.89</b>	<b>141.44</b>	<b>141.08</b>	<b>140.83</b>	<b>140.68</b>	<b>140.52</b>	<b>140.37</b>	<b>140.21</b>	<b>140.04</b>	<b>139.87</b>	<b>139.70</b>	<b>139.52</b>	<b>139.34</b>	<b>139.16</b>	<b>138.97</b>	<b>138.78</b>	<b>138.59</b>	<b>138.40</b>	<b>138.21</b>	<b>138.02</b>	<b>137.83</b>	<b>137.64</b>	<b>137.45</b>	<b>137.26</b>	<b>137.07</b>		

### Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	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	36	37	38	39	40	
O&M expn	Rs/kWh	2.20	1.39	1.45	1.50	1.56	1.62	1.68	1.75	1.81	1.88	1.96	2.03	2.11	2.19	2.28	2.36	2.45	2.55	2.65	2.75	2.85	2.96	3.08	3.19	3.32	3.44	3.58	3.71	3.86	4.00	4.16	4.32	4.48	4.66	4.83	5.02	5.21	5.41	5.62	5.84	6.06
Depreciation	Rs/kWh	1.08	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	1.40	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Int. on term loan	Rs/kWh	0.83	1.85	1.72	1.59	1.47	1.34	1.21	1.08	0.96	0.83	0.70	0.57	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	0.00
Int. on working capital	Rs/kWh	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.13	0.13	0.13	0.13	0.13	0.12	0.12	0.13	0.13	0.13	0.13	0.14	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.20	0.20	0.21	0.22	0.22	0.23	0.24	0.25	0.25	0.26
RoE	Rs/kWh	1.59	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52	1.52
<b>Total COG</b>	<b>Rs/kWh</b>	<b>5.84</b>	<b>6.28</b>	<b>6.21</b>	<b>6.14</b>	<b>6.07</b>	<b>6.00</b>	<b>5.94</b>	<b>5.88</b>	<b>5.82</b>	<b>5.76</b>	<b>5.70</b>	<b>5.65</b>	<b>5.61</b>	<b>5.56</b>	<b>5.52</b>	<b>5.48</b>	<b>5.43</b>	<b>5.43</b>	<b>5.44</b>	<b>5.44</b>	<b>5.45</b>	<b>5.46</b>	<b>5.47</b>	<b>5.48</b>	<b>5.49</b>	<b>5.50</b>	<b>5.51</b>	<b>5.52</b>	<b>5.53</b>	<b>5.54</b>	<b>5.55</b>	<b>5.56</b>	<b>5.57</b>	<b>5.58</b>	<b>5.59</b>	<b>5.60</b>	<b>5.61</b>	<b>5.62</b>	<b>5.63</b>	<b>5.64</b>	

<b>Levelised Tariff</b>	<b>5.84</b>	Rs/Unit
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CERC RE Tariff Order for FY 2022-23

Annexure 1D							
Assumption for Small Hydro based Project Parameters: Other States - >5 MW upto 25MW							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Other States - >5 MW upto 25MW		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Capacity Utilization Factor	%	30%		
			Auxiliary Consumption	%	1.00%		
			Useful Life	Years	40		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	900.00		
3	Sources of Fund	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	630.00		
			Total Equity Amout	Rs Lakh	270.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	630.00	
				Moratorium Period	years	0	
				Repayment Period	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lacs	270.00
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (after 20 years)	% p.a	21.52%	
				Discount Rate		8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	0.80%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			-				
		Interest On Working Capital		%	10.62%		
6	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	26.28		
			Total O & M Expenses Escalation	%	3.84%		
7	Generation & Sale of Energy		Total No .Of Hours	Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Small Hydro 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	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40		
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	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	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	36	37	38	39	40			
O&M Expenses	Rs Lakh		26.28	27.29	28.33	29.42	30.55	31.73	32.94	34.21	35.52	36.89	38.30	39.77	41.30	42.89	44.53	46.24	48.02	49.86	51.78	53.77	55.83	57.98	60.20	62.51	64.91	67.41	69.99	72.68	75.47	78.37	81.38	84.51	87.75	91.12	94.62	98.25	102.03	105.94	110.01	114.24			
Depreciation	Rs Lakh		42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	42.00	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	7.20	
Interest on term loan	Rs Lakh		55.52	51.69	47.86	44.04	40.21	36.38	32.55	28.72	24.89	21.06	17.23	13.40	9.57	5.74	1.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		2.94	2.93	2.92	2.91	2.90	2.89	2.89	2.89	2.89	2.89	2.89	2.90	2.91	2.92	2.50	2.56	2.64	2.71	2.79	3.03	3.11	3.20	3.29	3.38	3.48	3.58	3.68	3.79	3.90	4.02	4.14	4.26	4.39	4.53	4.67	4.81	4.96	5.12	5.28				
Return on Equity	Rs Lakh		45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	45.80	
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>172.54</b>	<b>169.71</b>	<b>166.92</b>	<b>164.17</b>	<b>161.46</b>	<b>158.80</b>	<b>156.18</b>	<b>153.62</b>	<b>151.10</b>	<b>148.64</b>	<b>146.23</b>	<b>143.87</b>	<b>141.58</b>	<b>139.35</b>	<b>137.17</b>	<b>101.74</b>	<b>103.59</b>	<b>105.50</b>	<b>107.49</b>	<b>109.56</b>	<b>124.17</b>	<b>126.39</b>	<b>128.70</b>	<b>131.11</b>	<b>133.60</b>	<b>136.19</b>	<b>138.88</b>	<b>141.67</b>	<b>144.57</b>	<b>147.58</b>	<b>150.70</b>	<b>153.95</b>	<b>157.32</b>	<b>160.82</b>	<b>164.45</b>	<b>168.22</b>	<b>172.14</b>	<b>176.21</b>	<b>180.44</b>	<b>184.82</b>			

### Levillised tariff corresponding to Useful life

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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	
O&M expn	Rs/kWh	1.59	1.01	1.05	1.09	1.13	1.17	1.22	1.27	1.31	1.36	1.42	1.47	1.53	1.59	1.65	1.71	1.78	1.84	1.92	1.99	2.07	2.14	2.23	2.31	2.40	2.49	2.59	2.69	2.79	2.90	3.01	3.13	3.25	3.37	3.50	3.63	3.77	3.92	4.07	4.23	4.39	
Depreciation	Rs/kWh	1.25	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	1.61	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
Int. on term loan	Rs/kWh	0.96	2.13	1.99	1.84	1.69	1.54	1.40	1.25	1.10	0.96	0.81	0.66	0.51	0.37	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	0.00	0.00	0.00	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	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.10	0.10	0.11	0.12	0.12	0.12	0.13	0.13	0.13	0.14	0.14	0.15	0.15	0.15	0.16	0.16	0.17	0.17	0.18	0.18	0.19	0.20	0.20	
RoE	Rs/kWh	1.84	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	1.76	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23
<b>Total COG</b>	<b>Rs/kWh</b>	<b>5.76</b>	<b>6.63</b>	<b>6.52</b>	<b>6.41</b>	<b>6.31</b>	<b>6.20</b>	<b>6.10</b>	<b>6.00</b>	<b>5.90</b>	<b>5.80</b>	<b>5.71</b>	<b>5.62</b>	<b>5.53</b>	<b>5.44</b>	<b>5.35</b>	<b>5.27</b>	<b>3.91</b>	<b>3.98</b>	<b>4.05</b>	<b>4.13</b>	<b>4.21</b>	<b>4.77</b>	<b>4.85</b>	<b>4.94</b>	<b>5.04</b>	<b>5.13</b>	<b>5.23</b>	<b>5.33</b>	<b>5.44</b>	<b>5.55</b>	<b>5.67</b>	<b>5.79</b>	<b>5.91</b>	<b>6.04</b>	<b>6.18</b>	<b>6.32</b>	<b>6.46</b>	<b>6.61</b>	<b>6.77</b>	<b>6.93</b>	<b>7.10</b>	

<b>Levillised Tariff</b>	<b>5.76</b>	Rs/Unit
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**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.1A</b>					
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh</b>					
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	10.00%
			PLF	%	80.00%
			Useful Life	Years	25
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	391.30
			Total Equity Amount	Rs Lakh	167.70
		<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
	Discount Rate (equiv. to WACC)	%	8.35%		
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15.00%
		Receivables for Debtors		Months	1.5
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
	Interest On Working Capital		%	10.62%	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00
			During stabilization period	Kcal/kWh	4200.00
		<u>Biomass</u>	Base Price	Rs/T	3666.92
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor		5.00%
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05
		O & M Expenses Escalation		%	3.84%
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	6.31	6.31	6.31	6.31	6.31
<b>Variable Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		20.31	21.21	22.16	23.15	24.20	25.30	26.45	27.66	28.94	30.27	31.68	33.15	34.70	36.33	38.04	39.85	41.57	43.58	45.69	47.90	50.32	52.76	55.32	58.00	60.82
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>159.38</b>	<b>159.83</b>	<b>160.39</b>	<b>161.08</b>	<b>161.90</b>	<b>162.86</b>	<b>163.95</b>	<b>165.20</b>	<b>166.59</b>	<b>168.15</b>	<b>169.88</b>	<b>171.77</b>	<b>173.85</b>	<b>176.12</b>	<b>178.59</b>	<b>181.36</b>	<b>184.36</b>	<b>187.61</b>	<b>191.11</b>	<b>194.86</b>	<b>198.87</b>	<b>203.14</b>	<b>207.68</b>	<b>212.49</b>	<b>217.57</b>

### Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	8.65	5.52	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.56	8.99	9.44	9.91	10.41	10.93	11.48	12.05	12.65	13.28	13.95	14.65	15.38	16.15	16.96	17.80
O&M expn	Rs/kWh	1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	0.37	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	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	0.27	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.48	0.32	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	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.84	0.88	0.92	0.96
RoE	Rs/kWh	0.46	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.34</b>	<b>8.05</b>	<b>8.33</b>	<b>8.63</b>	<b>8.94</b>	<b>9.27</b>	<b>9.63</b>	<b>10.00</b>	<b>10.38</b>	<b>10.80</b>	<b>11.23</b>	<b>11.68</b>	<b>12.16</b>	<b>12.67</b>	<b>13.20</b>	<b>13.76</b>	<b>14.33</b>	<b>14.79</b>	<b>15.48</b>	<b>16.20</b>	<b>16.96</b>	<b>17.88</b>	<b>18.71</b>	<b>19.59</b>	<b>20.51</b>	<b>21.47</b>

Variable Cost (Rs/Unit)	5.52
Levillised Tariff (Fixed) (Rs/Unit)	2.70
<b>Levillised Tariff(Rs/Unit)</b>	<b>8.22</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.00%	35.00%	21.00%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	6.79
Electricity Generation (Levillised) (Rs)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.1B							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
					Total Equity Amount	Rs Lakh	167.70
				<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
					Moratorium Period	years	0
					Repayment Period( incld Moratorium)	years	15
					Interest Rate	%	9.12%
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors	Months	1.5		
				<u>For Variable Charges</u>			
				Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4174.07	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

# CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		396.59	416.42	437.24	459.10	482.05	506.16	531.46	558.04	585.94	615.24	646.00	678.30	712.21	747.82	785.21	824.48	865.70	908.98	954.43	#####	1,052.26	1,104.88	1,160.12	1,218.13	1,279.03
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs. Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs. Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		22.69	23.71	24.78	25.90	27.09	28.33	29.63	31.01	32.45	33.96	35.55	37.22	38.97	40.81	42.74	44.59	46.75	49.02	51.40	53.90	56.63	59.38	62.27	65.30	68.48
Return on Equity	Rs. Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs. Lakh</b>		<b>161.76</b>	<b>162.32</b>	<b>163.01</b>	<b>163.83</b>	<b>164.79</b>	<b>165.89</b>	<b>167.14</b>	<b>168.54</b>	<b>170.10</b>	<b>171.84</b>	<b>173.75</b>	<b>175.84</b>	<b>178.12</b>	<b>180.61</b>	<b>183.30</b>	<b>172.30</b>	<b>177.85</b>	<b>183.63</b>	<b>189.66</b>	<b>195.95</b>	<b>210.25</b>	<b>217.08</b>	<b>224.21</b>	<b>231.64</b>	<b>239.40</b>

### Levillised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs./kWh	<b>9.84</b>	6.28	6.60	6.93	7.27	7.64	8.02	8.42	8.84	9.28	9.75	10.24	10.75	11.28	11.85	12.44	13.06	13.72	14.40	15.12	15.88	16.67	17.51	18.38	19.30	20.27
O&M expn	Rs./kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs./kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs./kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs./kWh	<b>0.54</b>	0.36	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	0.74	0.78	0.81	0.85	0.90	0.94	0.99	1.03	1.09
RoE	Rs./kWh	<b>0.46</b>	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs./kWh</b>	<b>12.60</b>	<b>8.85</b>	<b>9.17</b>	<b>9.51</b>	<b>9.87</b>	<b>10.25</b>	<b>10.65</b>	<b>11.07</b>	<b>11.51</b>	<b>11.98</b>	<b>12.47</b>	<b>12.99</b>	<b>13.53</b>	<b>14.11</b>	<b>14.71</b>	<b>15.35</b>	<b>15.79</b>	<b>16.53</b>	<b>17.31</b>	<b>18.13</b>	<b>18.98</b>	<b>20.00</b>	<b>20.95</b>	<b>21.93</b>	<b>22.97</b>	<b>24.06</b>

Variable Cost (Rs./Unit)	<b>6.28</b>
Levillised Tariff (Fixed) (Rs./Unit)	2.75
<b>Levillised Tariff (Rs./Unit)</b>	<b>9.04</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs. Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs. Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	

Net Depreciation Benefit	Rs. Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs. Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs./Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	6.79
Electricity Generation (Levillised) (Rs./Unit)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.1C							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
					Total Equity Amout	Rs Lakh	167.70
				<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
					Moratorium Period	years	0
					Repayment Period( incld Moratorium)	years	15
					Interest Rate	%	9.12%
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
		4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
MAT Rate	%				17.47%		
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%		
	Depreciation Rate 16th year onwards			%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
		Maintenance Spare	(% of O&M expenses)		15.00%		
		Receivables for Debtors	Months	1.5			
		<u>For Variable Charges</u>					
			Biomass Stock	Months	4		
	Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
		<u>Biomass</u>	Base Price	Rs/T	4268.88		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O & M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		

CERC RE Tariff Order for FY 2022-23

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8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766
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## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		405.60	425.88	447.17	469.53	493.00	517.65	543.54	570.71	599.25	629.21	660.67	693.71	728.39	764.81	803.05	843.20	885.36	929.63	976.11	#####	1,076.17	1,129.97	1,186.47	1,245.80	1,308.09
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		23.13	24.17	25.27	26.42	27.63	28.90	30.23	31.63	33.10	34.65	36.27	37.98	39.77	41.65	43.62	45.51	47.72	50.04	52.47	55.03	57.81	60.62	63.57	66.66	69.91
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>162.20</b>	<b>162.79</b>	<b>163.50</b>	<b>164.35</b>	<b>165.33</b>	<b>166.46</b>	<b>167.73</b>	<b>169.17</b>	<b>170.76</b>	<b>172.53</b>	<b>174.47</b>	<b>176.60</b>	<b>178.92</b>	<b>181.44</b>	<b>184.18</b>	<b>187.23</b>	<b>190.62</b>	<b>194.36</b>	<b>198.47</b>	<b>202.97</b>	<b>207.87</b>	<b>213.18</b>	<b>218.92</b>	<b>225.11</b>	<b>231.79</b>

### Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs./kWh	<b>10.07</b>	6.43	6.75	7.08	7.44	7.81	8.20	8.61	9.04	9.49	9.97	10.47	10.99	11.54	12.12	12.72	13.36	14.03	14.73	15.47	16.24	17.05	17.90	18.80	19.74	20.73
O&M expn	Rs./kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs./kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs./kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs./kWh	<b>0.55</b>	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.87	0.92	0.96	1.01	1.06	1.11
RoE	Rs./kWh	<b>0.46</b>	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs./kWh</b>	<b>12.83</b>	<b>9.00</b>	<b>9.33</b>	<b>9.68</b>	<b>10.04</b>	<b>10.43</b>	<b>10.84</b>	<b>11.27</b>	<b>11.72</b>	<b>12.20</b>	<b>12.70</b>	<b>13.23</b>	<b>13.79</b>	<b>14.38</b>	<b>14.99</b>	<b>15.64</b>	<b>16.10</b>	<b>16.86</b>	<b>17.65</b>	<b>18.49</b>	<b>19.36</b>	<b>20.40</b>	<b>21.36</b>	<b>22.37</b>	<b>23.43</b>	<b>24.54</b>

Variable Cost (Rs./Unit)	<b>6.43</b>
Levillised Tariff (Fixed) (Rs./Unit)	2.77
<b>Levillised Tariff(Rs./Unit)</b>	<b>9.19</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levillised (Rs./Unit)	6.79
Electricity Generation (Levillised) (Rs./Unit)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.1D							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amount	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate (equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
				Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4365.90	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		414.81	435.55	457.33	480.20	504.21	529.42	555.89	583.68	612.87	643.51	675.69	709.47	744.95	782.19	821.30	862.37	905.49	950.76	998.30	#####	1,100.62	1,155.65	1,213.44	1,274.11	1,337.81
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		23.58	24.65	25.77	26.94	28.18	29.48	30.84	32.27	33.77	35.35	37.01	38.76	40.58	42.51	44.52	46.46	48.71	51.08	53.57	56.18	59.01	61.89	64.90	68.06	71.38
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	36.09	36.09	36.09	36.09	36.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>162.66</b>	<b>163.27</b>	<b>164.00</b>	<b>164.87</b>	<b>165.88</b>	<b>167.04</b>	<b>168.34</b>	<b>169.80</b>	<b>171.43</b>	<b>173.23</b>	<b>175.21</b>	<b>177.38</b>	<b>179.74</b>	<b>182.30</b>	<b>185.08</b>	<b>174.17</b>	<b>179.81</b>	<b>185.69</b>	<b>191.82</b>	<b>198.22</b>	<b>212.63</b>	<b>219.59</b>	<b>226.84</b>	<b>234.41</b>	<b>242.30</b>

## Levilled tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	<b>10.30</b>	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82	16.61	17.44	18.31	19.23	20.19	21.20
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs/kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.57</b>	0.37	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.61	0.64	0.67	0.71	0.74	0.77	0.81	0.85	0.89	0.94	0.98	1.03	1.08	1.13
RoE	Rs/kWh	<b>0.46</b>	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	0.57	0.57	0.57	0.57	0.57	0.57
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.07</b>	<b>9.15</b>	<b>9.49</b>	<b>9.84</b>	<b>10.22</b>	<b>10.62</b>	<b>11.03</b>	<b>11.47</b>	<b>11.94</b>	<b>12.43</b>	<b>12.94</b>	<b>13.48</b>	<b>14.05</b>	<b>14.65</b>	<b>15.28</b>	<b>15.95</b>	<b>16.42</b>	<b>17.20</b>	<b>18.01</b>	<b>18.86</b>	<b>19.75</b>	<b>20.81</b>	<b>21.79</b>	<b>22.82</b>	<b>23.90</b>	<b>25.04</b>

Variable Cost (Rs/Unit)	<b>6.57</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.78
<b>Levilled Tariff (Rs/Unit)</b>	<b>9.35</b>

## Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00

## Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	6.79
Electricity Generation (Levilled) (Rs./Unit)	6.04
<b>Levilled benefit (Rs./Unit)</b>	<b>0.11</b>



**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.1E</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amount	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	3643.76	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		346.20	363.51	381.69	400.77	420.81	441.85	463.94	487.14	511.50	537.07	563.93	592.12	621.73	652.81	685.46	719.73	755.71	793.50	833.18	874.83	918.58	964.50	1,012.73	1,063.37	1,116.53
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		20.20	21.10	22.04	23.03	24.07	25.16	26.30	27.51	28.78	30.10	31.50	32.97	34.51	36.13	37.82	39.42	41.33	43.33	45.42	47.63	50.04	52.46	55.00	57.67	60.47
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>159.28</b>	<b>159.71</b>	<b>160.27</b>	<b>160.96</b>	<b>161.77</b>	<b>162.72</b>	<b>163.81</b>	<b>165.04</b>	<b>166.43</b>	<b>167.98</b>	<b>169.70</b>	<b>171.59</b>	<b>173.66</b>	<b>175.92</b>	<b>178.38</b>	<b>181.14</b>	<b>184.33</b>	<b>187.94</b>	<b>191.98</b>	<b>196.56</b>	<b>201.69</b>	<b>207.38</b>	<b>213.64</b>	<b>220.48</b>	<b>227.91</b>

### Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	8.59	5.49	5.76	6.05	6.35	6.67	7.00	7.35	7.72	8.10	8.51	8.93	9.38	9.85	10.34	10.86	11.40	11.97	12.57	13.20	13.86	14.55	15.28	16.05	16.85	17.69
O&M expn	Rs/kWh	1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	0.37	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs/kWh	0.27	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.48	0.32	0.33	0.35	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.62	0.65	0.69	0.72	0.75	0.79	0.83	0.87	0.91	0.96
RoE	Rs/kWh	0.46	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.29</b>	<b>8.01</b>	<b>8.29</b>	<b>8.59</b>	<b>8.90</b>	<b>9.23</b>	<b>9.58</b>	<b>9.95</b>	<b>10.33</b>	<b>10.74</b>	<b>11.17</b>	<b>11.62</b>	<b>12.10</b>	<b>12.60</b>	<b>13.13</b>	<b>13.69</b>	<b>14.05</b>	<b>14.71</b>	<b>15.39</b>	<b>16.11</b>	<b>16.87</b>	<b>17.78</b>	<b>18.61</b>	<b>19.48</b>	<b>20.40</b>	<b>21.36</b>

Variable Cost (Rs/Unit)	5.49
Levillised Tariff (Fixed) (Rs/Unit)	2.69
<b>Levillised Tariff (Rs/Unit)</b>	<b>8.18</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levillised (Rs./Unit)	6.79
Electricity Generation (Levillised) (Rs./Unit)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.11</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.1F</b>					
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu</b>					
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>1</b>
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	10.00%
			PLF	%	80.00%
			Useful Life	Years	25
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	391.30
			Total Equity Amount	Rs Lakh	167.70
		<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15.00%
		Receivables for Debtors		Months	1.5
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
		Interest On Working Capital		%	10.62%
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00
			During stabilization period	Kcal/kWh	4200.00
		<u>Biomass</u>	Base Price	Rs/T	3607.38
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor		5.00%
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05
		O & M Expenses Escalation		%	3.84%
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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			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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh			342.74	359.88	377.88	396.77	416.61	437.44	459.31	482.28	506.39	531.71	558.30	586.21	615.52	646.30	678.61	712.54	748.17	785.58	824.86	866.10	909.40	954.87	1,002.62	1,052.75	1,105.39

  

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			50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh			26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh			34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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			20.03	20.92	21.85	22.83	23.86	24.94	26.08	27.27	28.52	29.84	31.22	32.68	34.20	35.80	37.49	39.07	40.96	42.94	45.01	47.19	49.58	51.98	54.50	57.14	59.92
Return on Equity	Rs Lakh			28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>			<b>159.10</b>	<b>159.54</b>	<b>160.09</b>	<b>160.76</b>	<b>161.56</b>	<b>162.50</b>	<b>163.58</b>	<b>164.80</b>	<b>166.18</b>	<b>167.72</b>	<b>169.42</b>	<b>171.30</b>	<b>173.35</b>	<b>175.60</b>	<b>178.04</b>	<b>166.78</b>	<b>172.05</b>	<b>177.55</b>	<b>183.27</b>	<b>189.24</b>	<b>203.20</b>	<b>209.68</b>	<b>216.44</b>	<b>223.49</b>	<b>230.83</b>

### Levillised tariff corresponding to Useful life

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	
Per unit Variable Cost	Rs/kWh			8.51	5.43	5.70	5.99	6.29	6.60	6.93	7.28	7.64	8.02	8.42	8.85	9.29	9.75	10.24	10.75	11.29	11.85	12.45	13.07	13.72	14.41	15.13	15.89	16.68	17.51
O&M expn	Rs/kWh			1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh			0.37	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	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	
Int. on term loan	Rs/kWh			0.27	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh			0.48	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	0.59	0.62	0.65	0.68	0.71	0.75	0.79	0.82	0.86	0.91	0.95
RoE	Rs/kWh			0.46	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>			<b>11.20</b>	<b>7.95</b>	<b>8.23</b>	<b>8.52</b>	<b>8.83</b>	<b>9.16</b>	<b>9.51</b>	<b>9.87</b>	<b>10.28</b>	<b>10.66</b>	<b>11.08</b>	<b>11.53</b>	<b>12.00</b>	<b>12.50</b>	<b>13.02</b>	<b>13.57</b>	<b>13.93</b>	<b>14.58</b>	<b>15.26</b>	<b>15.97</b>	<b>16.72</b>	<b>17.63</b>	<b>18.48</b>	<b>19.31</b>	<b>20.22</b>	<b>21.17</b>

Variable Cost (Rs/Unit)	5.43
Levillised Tariff (Fixed) (Rs/Unit)	2.69
<b>Levillised Tariff(Rs/Unit)</b>	<b>8.12</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	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%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	0.15	

Tax Benefit Levillised (Rs/Unit)	6.79
Electricity Generation (Levillised) (Rs./Unit)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.11</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.1G</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>1</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amout	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
			Interest On Working Capital		%	10.62%	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	3666.92	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		20.31	21.21	22.16	23.15	24.20	25.30	26.45	27.66	28.94	30.27	31.68	33.15	34.70	36.33	38.04	39.65	41.57	43.58	45.69	47.90	50.32	52.76	55.32	58.00	60.82
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>159.38</b>	<b>159.83</b>	<b>160.39</b>	<b>161.08</b>	<b>161.90</b>	<b>162.86</b>	<b>163.95</b>	<b>165.20</b>	<b>166.59</b>	<b>168.15</b>	<b>169.88</b>	<b>171.77</b>	<b>173.85</b>	<b>176.12</b>	<b>178.59</b>	<b>167.36</b>	<b>172.66</b>	<b>178.19</b>	<b>183.94</b>	<b>189.94</b>	<b>203.94</b>	<b>210.46</b>	<b>217.26</b>	<b>224.35</b>	<b>231.73</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.65</b>	5.52	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.56	8.99	9.44	9.91	10.41	10.93	11.48	12.05	12.65	13.28	13.95	14.65	15.38	16.15	16.96	17.80
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs/kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02										
Int. on working capital	Rs/kWh	<b>0.48</b>	0.32	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	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.84	0.88	0.92	0.96
RoE	Rs/kWh	<b>0.46</b>	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.34</b>	<b>8.05</b>	<b>8.33</b>	<b>8.63</b>	<b>8.94</b>	<b>9.27</b>	<b>9.63</b>	<b>10.00</b>	<b>10.38</b>	<b>10.80</b>	<b>11.23</b>	<b>11.68</b>	<b>12.16</b>	<b>12.67</b>	<b>13.20</b>	<b>13.76</b>	<b>14.13</b>	<b>14.79</b>	<b>15.48</b>	<b>16.20</b>	<b>16.96</b>	<b>17.88</b>	<b>18.71</b>	<b>19.59</b>	<b>20.51</b>	<b>21.47</b>

### Levelised

Variable Cost (Rs/Unit)	<b>5.52</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.70
<b>Levelised Tariff (Rs/Unit)</b>	<b>8.22</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	6.79
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.11</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.1H</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00	
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amount	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	<b>Working Capital</b>	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3730.86
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		354.48	372.20	390.81	410.35	430.87	452.41	475.03	498.78	523.72	549.91	577.41	606.28	636.59	668.42	701.84	736.93	773.78	812.47	853.09	895.75	940.53	987.56	1,036.94	1,088.78	1,143.22
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		20.61	21.52	22.49	23.50	24.56	25.68	26.85	28.08	29.38	30.74	32.17	33.67	35.24	36.90	38.63	40.27	42.22	44.26	46.41	48.66	51.12	53.60	56.20	58.92	61.78
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>159.68</b>	<b>160.14</b>	<b>160.72</b>	<b>161.43</b>	<b>162.27</b>	<b>163.24</b>	<b>164.35</b>	<b>165.62</b>	<b>167.04</b>	<b>168.62</b>	<b>170.36</b>	<b>172.29</b>	<b>174.39</b>	<b>176.69</b>	<b>179.18</b>	<b>181.97</b>	<b>185.07</b>	<b>188.57</b>	<b>192.46</b>	<b>196.75</b>	<b>201.44</b>	<b>206.53</b>	<b>212.02</b>	<b>217.91</b>	<b>224.20</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.80</b>	5.62	5.90	6.19	6.50	6.83	7.17	7.53	7.90	8.30	8.71	9.15	9.61	10.09	10.59	11.12	11.68	12.26	12.87	13.52	14.19	14.90	15.65	16.43	17.25	18.11
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs/kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	0.33	0.34	0.36	0.37	0.39	0.41	0.43	0.44	0.47	0.49	0.51	0.53	0.56	0.58	0.61	0.64	0.67	0.70	0.74	0.77	0.81	0.85	0.89	0.93	0.98
RoE	Rs/kWh	<b>0.46</b>	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.50</b>	<b>8.15</b>	<b>8.43</b>	<b>8.74</b>	<b>9.06</b>	<b>9.40</b>	<b>9.75</b>	<b>10.13</b>	<b>10.53</b>	<b>10.94</b>	<b>11.38</b>	<b>11.85</b>	<b>12.34</b>	<b>12.85</b>	<b>13.39</b>	<b>13.96</b>	<b>14.54</b>	<b>15.01</b>	<b>15.71</b>	<b>16.44</b>	<b>17.21</b>	<b>18.15</b>	<b>18.99</b>	<b>19.89</b>	<b>20.82</b>	<b>21.80</b>

### Levelised

Variable Cost (Rs/Unit)	<b>5.62</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.70
<b>Levelised Tariff(Rs/Unit)</b>	<b>8.32</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	6.79
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.11</b>



CERC RE Tariff Order for FY 2022-23

Annexure 2.1 I							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Others							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amout	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
				Return on Equity (upto 20 years)	% p.a	16.96%	
		Return on Equity (After 20 years)		21.52%			
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
		Interest On Working Capital		%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	3921.59	
				GCV-Biomass	Kcal/kg	3100.00	
			-	Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

Units Generation		Unit	Year-->																									
Installed Capacity		MW	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	
Net Generation		MU	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	6.31	6.31	6.31	6.31	6.31	6.31
Variable Cost		Unit	Year-->																									
Biomass Cost		Rs. Lakh	372.60	391.23	410.79	431.33	452.90	475.54	499.32	524.28	550.50	578.02	606.92	637.27	669.13	702.59	737.72	774.61	813.34	854.00	896.70	941.54	988.62	1,038.03	1,089.95	1,144.45	1,201.67	
Fixed Cost		Unit	Year-->																									
O&M Expenses		Rs. Lakh	50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65	
Depreciation		Rs. Lakh	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan		Rs. Lakh	34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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	21.50	22.46	23.47	24.53	25.65	26.82	28.05	29.34	30.70	32.12	33.62	35.19	36.85	38.58	40.40	42.13	44.17	46.31	48.56	50.91	53.49	56.09	58.81	61.67	64.67	
Return on Equity		Rs. Lakh	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
Total Fixed Cost		Rs. Lakh	169.59	161.08	161.71	162.46	163.35	164.38	165.55	166.98	168.36	170.00	171.82	173.81	176.00	178.37	180.95	183.84	187.07	190.62	194.49	198.68	203.19	208.03	213.19	218.67	224.48	

### Levelised tariff corresponding to Useful Life

Per Unit Cost of Generation		Unit	Year-->																									
Per unit Variable Cost		Rs./kWh	9.25	8.90	8.55	8.20	7.85	7.50	7.15	6.80	6.45	6.10	5.75	5.40	5.05	4.70	4.35	4.00	3.65	3.30	2.95	2.60	2.25	1.90	1.55	1.20	0.85	
O&M expn		Rs./kWh	1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	
Depreciation		Rs./kWh	0.37	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	0.41	0.41	0.41	0.41	0.41	
Int. on term loan		Rs./kWh	0.27	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital		Rs./kWh	0.84	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.49	0.51	0.53	0.56	0.58	0.61	0.64	0.67	0.70	0.73	0.77	0.81	0.85	0.89	0.93	0.98	
Real		Rs./kWh	0.46	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	0.45	0.45	0.45	0.45	
Total COG		Rs./kWh	11.97	8.45	8.75	9.07	9.41	9.76	10.14	10.53	10.95	11.39	11.85	12.34	12.85	13.39	13.96	14.56	14.96	15.66	16.40	17.17	17.98	18.95	19.83	20.77	21.75	22.77

Levelised	
Variable Cost (Rs./Unit)	8.90
LevBsed Tariff (Fixed) (Rs./Unit)	2.73
<b>Levelised Tariff (Rs./Unit)</b>	<b>8.63</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	559.00

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	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs. Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs. Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs. Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs./Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	6.79
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.11</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.2 A</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420.00		
			Total Equity Amount	Rs Lakh	180.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	180.00	
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
					MAT Rate	%	17.47%
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%		
	Depreciation Rate 16th year onwards			%	2.00%		
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expences)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
		<u>Biomass</u>	Base Price	Rs/T	3666.92		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
			Interest On Working Capital		%	10.62%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.40	21.30	22.24	23.23	24.28	25.37	26.52	27.73	29.00	30.34	31.74	33.22	34.76	36.39	38.09	39.69	41.60	43.62	45.73	47.94	50.37	52.81	55.37	58.05	60.86
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>166.00</b>	<b>166.27</b>	<b>166.66</b>	<b>167.17</b>	<b>167.81</b>	<b>168.59</b>	<b>169.51</b>	<b>170.58</b>	<b>171.80</b>	<b>173.18</b>	<b>174.72</b>	<b>176.45</b>	<b>178.35</b>	<b>180.44</b>	<b>182.73</b>	<b>170.31</b>	<b>175.61</b>	<b>181.13</b>	<b>186.89</b>	<b>192.89</b>	<b>207.45</b>	<b>213.98</b>	<b>220.77</b>	<b>227.86</b>	<b>235.25</b>

### Levillised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.85</b>	5.65	5.93	6.22	6.54	6.86	7.21	7.57	7.94	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.32	12.94	13.59	14.27	14.98	15.73	16.51	17.34	18.21
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.94	0.99
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.69</b>	<b>8.34</b>	<b>8.62</b>	<b>8.92</b>	<b>9.24</b>	<b>9.58</b>	<b>9.94</b>	<b>10.31</b>	<b>10.71</b>	<b>11.12</b>	<b>11.56</b>	<b>12.03</b>	<b>12.51</b>	<b>13.03</b>	<b>13.57</b>	<b>14.14</b>	<b>14.80</b>	<b>15.17</b>	<b>15.87</b>	<b>16.62</b>	<b>17.39</b>	<b>18.34</b>	<b>19.20</b>	<b>20.09</b>	<b>21.03</b>	<b>22.02</b>

### Levillised

Variable Cost (Rs./Unit)	<b>5.65</b>
Levillised Tariff (Fixed) (Rs./Unit)	2.84
<b>Levillised Tariff(Rs./Unit)</b>	<b>8.49</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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%	2.88%	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

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	7.28
Electricity Generation (Levillised) (Rs./Unit)	5.91
<b>Levillised benefit (Rs./Unit)</b>	<b>0.12</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.2B</b>					
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana</b>					
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>2</b>
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	12.00%
			PLF	%	80.00%
			Useful Life	Years	25
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	420.00
			Total Equity Amount	Rs Lakh	180.00
		<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15.00%
		Receivables for Debtors		Months	1.5
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
		Interest On Working Capital		%	10.62%
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00
			During stabilization period	Kcal/kWh	4200.00
		<u>Biomass</u>	Base Price	Rs/T	4174.07
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor		5.00%
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05
		O & M Expenses Escalation		%	3.84%
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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	
Biomass Cost	Rs. Lakh		396.59	416.42	437.24	459.10	482.05	506.16	531.46	558.04	585.94	615.24	646.00	678.30	712.21	747.82	785.21	824.48	865.70	908.98	954.43	#####	1,052.26	1,104.88	1,160.12	1,218.13	1,279.03	
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65	
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		22.77	23.79	24.86	25.98	27.16	28.41	29.71	31.08	32.52	34.03	35.61	37.28	39.03	40.87	42.80	44.63	46.79	49.06	51.44	53.94	56.68	59.43	62.32	65.35	68.53	
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>168.38</b>	<b>168.76</b>	<b>169.28</b>	<b>169.92</b>	<b>170.70</b>	<b>171.62</b>	<b>172.69</b>	<b>173.92</b>	<b>175.31</b>	<b>176.86</b>	<b>178.60</b>	<b>180.51</b>	<b>182.62</b>	<b>184.92</b>	<b>187.44</b>	<b>175.25</b>	<b>180.80</b>	<b>186.58</b>	<b>192.61</b>	<b>198.89</b>	<b>213.76</b>	<b>220.60</b>	<b>227.72</b>	<b>235.16</b>	<b>242.91</b>	

## Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>10.07</b>	6.43	6.75	7.09	7.44	7.81	8.20	8.61	9.04	9.49	9.97	10.47	10.99	11.54	12.12	12.72	13.36	14.03	14.73	15.47	16.24	17.05	17.90	18.80	19.74	20.73
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.56</b>	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.83	0.87	0.92	0.96	1.01	1.06	1.11
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.97</b>	<b>9.15</b>	<b>9.48</b>	<b>9.83</b>	<b>10.19</b>	<b>10.58</b>	<b>10.98</b>	<b>11.41</b>	<b>11.86</b>	<b>12.34</b>	<b>12.84</b>	<b>13.36</b>	<b>13.92</b>	<b>14.50</b>	<b>15.11</b>	<b>15.76</b>	<b>16.20</b>	<b>16.96</b>	<b>17.75</b>	<b>18.59</b>	<b>19.46</b>	<b>20.51</b>	<b>21.48</b>	<b>22.49</b>	<b>23.55</b>	<b>24.66</b>

Levelised	
Variable Cost (Rs/Unit)	<b>6.43</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.90
<b>Levelised Tariff(Rs/Unit)</b>	<b>9.33</b>

## Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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%	2.88%	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

## Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	7.28
Electricity Generation (Levelised) (Rs./Unit)	5.91
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.2C</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420.00		
			Total Equity Amout	Rs Lakh	180.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4268.88	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		

CERC RE Tariff Order for FY 2022-23

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8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00
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# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable 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
Biomass Cost		Rs. Lakh		405.60	425.88	447.17	469.53	493.00	517.65	543.54	570.71	599.25	629.21	660.67	693.71	728.39	764.81	803.05	843.20	885.36	929.63	976.11	#####	1,076.17	1,129.97	1,186.47	1,245.80	1,308.09
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation		Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan		Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		23.22	24.26	25.35	26.50	27.70	28.97	30.30	31.70	33.17	34.72	36.34	38.04	39.83	41.71	43.68	45.55	47.76	50.08	52.51	55.07	57.86	60.67	63.62	66.71	69.96
Return on Equity		Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>		<b>Rs Lakh</b>		<b>168.82</b>	<b>169.23</b>	<b>169.77</b>	<b>170.43</b>	<b>171.24</b>	<b>172.19</b>	<b>173.29</b>	<b>174.54</b>	<b>175.96</b>	<b>177.55</b>	<b>179.32</b>	<b>181.27</b>	<b>183.42</b>	<b>185.76</b>	<b>188.32</b>	<b>191.17</b>	<b>194.76</b>	<b>197.60</b>	<b>193.68</b>	<b>200.02</b>	<b>214.94</b>	<b>221.83</b>	<b>229.02</b>	<b>236.52</b>	<b>244.34</b>

## Levillised tariff corresponding to Useful life

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	
Per unit Variable Cost		Rs/kWh		10.30	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82	16.61	17.44	18.31	19.23	20.19	21.20
O&M expn		Rs/kWh		1.14	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation		Rs/kWh		0.40	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	0.45	0.45	0.45	0.45	
Int. on term loan		Rs/kWh		0.30	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital		Rs/kWh		0.57	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	0.74	0.77	0.81	0.85	0.89	0.94	0.98	1.03	1.08	1.13
RoE		Rs/kWh		0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>		<b>Rs/kWh</b>		<b>13.21</b>	<b>9.31</b>	<b>9.64</b>	<b>10.00</b>	<b>10.37</b>	<b>10.76</b>	<b>11.18</b>	<b>11.62</b>	<b>12.08</b>	<b>12.56</b>	<b>13.07</b>	<b>13.61</b>	<b>14.18</b>	<b>14.78</b>	<b>15.40</b>	<b>16.06</b>	<b>16.82</b>	<b>17.29</b>	<b>18.10</b>	<b>18.96</b>	<b>19.85</b>	<b>20.92</b>	<b>21.90</b>	<b>22.94</b>	<b>24.02</b>	<b>25.16</b>

## Levillised

Variable Cost (Rs/Unit)	6.57
Levillised Tariff (Fixed) (Rs/Unit)	2.91
<b>Levillised Tariff(Rs/Unit)</b>	<b>9.48</b>

## Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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%	2.88%	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

## Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	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%
Accelerated Depn.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.15	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	0.15	0.15

Tax Benefit Levillised (Rs./Unit)	7.28
Electricity Generation (Levillised) (Rs./Unit)	5.91
<b>Levillised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.2 D						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	2	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420.00	
			Total Equity Amount	Rs Lakh	180.00	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00
				Moratorium Period	years	0
				Repayment Period( incld Moratorium)	years	15
				Interest Rate	%	9.12%
			<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
				Return on Equity (upto 20 years)	% p.a	16.96%
				Return on Equity (After 20 years)		21.52%
				Discount Rate ( equiv. to WACC)	%	8.35%
		4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%
	MAT Rate			%	17.47%	
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%	
	Depreciation Rate 16th year onwards			%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
		<u>Biomass</u>	Base Price	Rs/T	4365.90	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
		O & M Expenses Escalation		%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable 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
Biomass Cost	Rs. Lakh		414.81	435.55	457.33	480.20	504.21	529.42	555.89	583.68	612.87	643.51	675.69	709.47	744.95	782.19	821.30	862.37	905.49	950.76	998.30	#####	1,100.62	1,155.65	1,213.44	1,274.11	1,337.81
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		23.67	24.73	25.85	27.02	28.26	29.55	30.91	32.34	33.84	35.42	37.08	38.82	40.64	42.56	44.58	46.50	48.75	51.12	53.61	56.21	59.06	61.93	64.95	68.11	71.43
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>169.28</b>	<b>169.71</b>	<b>170.27</b>	<b>170.96</b>	<b>171.79</b>	<b>172.77</b>	<b>173.90</b>	<b>175.18</b>	<b>176.64</b>	<b>178.26</b>	<b>180.06</b>	<b>182.05</b>	<b>184.23</b>	<b>186.62</b>	<b>189.22</b>	<b>177.12</b>	<b>182.76</b>	<b>188.64</b>	<b>194.77</b>	<b>201.16</b>	<b>216.15</b>	<b>223.10</b>	<b>230.35</b>	<b>237.92</b>	<b>245.81</b>

### Levilled tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	<b>10.53</b>	6.72	7.06	7.41	7.78	8.17	8.58	9.01	9.46	9.93	10.43	10.95	11.50	12.07	12.67	13.31	13.97	14.67	15.41	16.18	16.99	17.83	18.73	19.66	20.65	21.68
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.58</b>	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.72	0.75	0.79	0.83	0.87	0.91	0.96	1.00	1.05	1.10	1.16
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.46</b>	<b>9.46</b>	<b>9.81</b>	<b>10.17</b>	<b>10.55</b>	<b>10.95</b>	<b>11.38</b>	<b>11.83</b>	<b>12.30</b>	<b>12.79</b>	<b>13.32</b>	<b>13.87</b>	<b>14.45</b>	<b>15.06</b>	<b>15.70</b>	<b>16.37</b>	<b>16.84</b>	<b>17.63</b>	<b>18.46</b>	<b>19.33</b>	<b>20.25</b>	<b>21.34</b>	<b>22.34</b>	<b>23.40</b>	<b>24.50</b>	<b>25.66</b>

### Levilled

Variable Cost (Rs./Unit)	<b>6.72</b>
Levilled Tariff (Fixed) (Rs./Unit)	2.92
<b>Levilled Tariff (Rs./Unit)</b>	<b>9.65</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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	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	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.28
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.2 E</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00	
		<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420.00	
			Total Equity Amount	Rs Lakh	180.00	
		<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00	
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
		<u>Equity Component</u>	Equity amount	Rs Lakh	180.00	
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
			Depreciation Rate 16th year onwards	%	2.00%	
		<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>		
				O&M Charges	Months	1
	Maintenance Spare	(% of O&M exepenses)			15.00%	
	Receivables for Debtors			Months	1.5	
	<u>For Variable Charges</u>					
	Biomass Stock			Months	4	
	Interest On Working Capital		%	10.62%		
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
		<u>Biomass</u>	Base Price	Rs/T	3643.76	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor			5.00%
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05	
		O & M Expenses Escalation		%	3.84%	
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		346.20	363.51	381.69	400.77	420.81	441.85	463.94	487.14	511.50	537.07	563.93	592.12	621.73	652.81	685.46	719.73	755.71	793.50	833.18	874.83	918.58	964.50	1,012.73	1,063.37	1,116.53
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.29	21.18	22.12	23.11	24.14	25.23	26.38	27.58	28.84	30.17	31.57	33.03	34.57	36.18	37.88	39.46	41.37	43.37	45.46	47.66	50.08	52.51	55.05	57.71	60.51
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>165.89</b>	<b>166.16</b>	<b>166.54</b>	<b>167.04</b>	<b>167.68</b>	<b>168.45</b>	<b>169.36</b>	<b>170.42</b>	<b>171.64</b>	<b>173.01</b>	<b>174.55</b>	<b>176.26</b>	<b>178.16</b>	<b>180.24</b>	<b>182.52</b>	<b>170.08</b>	<b>175.37</b>	<b>180.88</b>	<b>186.63</b>	<b>192.61</b>	<b>207.17</b>	<b>213.67</b>	<b>220.46</b>	<b>227.53</b>	<b>234.90</b>

### Levilled tariff corresponding to Useful life

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	
Per unit Variable Cost	Rs/kWh		8.79	5.61	5.89	6.18	6.49	6.82	7.16	7.52	7.89	8.29	8.70	9.14	9.59	10.07	10.58	11.11	11.66	12.25	12.86	13.50	14.18	14.88	15.63	16.41	17.23	18.09
O&M expn	Rs/kWh		1.14	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh		0.40	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh		0.30	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh		0.49	0.33	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	0.64	0.67	0.70	0.74	0.77	0.81	0.85	0.89	0.94	
RoE	Rs/kWh		0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	
<b>Total COG</b>	<b>Rs/kWh</b>		<b>11.63</b>	<b>8.30</b>	<b>8.58</b>	<b>8.88</b>	<b>9.20</b>	<b>9.54</b>	<b>9.89</b>	<b>10.26</b>	<b>10.66</b>	<b>11.07</b>	<b>11.51</b>	<b>11.97</b>	<b>12.45</b>	<b>12.96</b>	<b>13.50</b>	<b>14.06</b>	<b>14.42</b>	<b>15.09</b>	<b>15.79</b>	<b>16.53</b>	<b>17.30</b>	<b>18.24</b>	<b>19.09</b>	<b>19.98</b>	<b>20.92</b>	

### Levilled

Variable Cost (Rs/Unit)	5.61
Levilled Tariff (Fixed) (Rs/Unit)	2.84
<b>Levilled Tariff(Rs/Unit)</b>	<b>8.45</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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%	2.88%	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

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.28
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.2 F							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420.00		
			Total Equity Amount	Rs Lakh	180.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
		Interest On Working Capital		%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
		<u>Biomass</u>	Base Price	Rs/T	3607.38		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor			5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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	MJ		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable 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
Biomass Cost	Rs. Lakh		342.74	359.88	377.88	396.77	416.61	437.44	459.31	482.28	506.39	531.71	558.30	586.21	615.52	646.30	678.61	712.54	748.17	785.58	824.86	866.10	909.40	954.87	1,002.62	1,052.75	1,105.39
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.12	21.00	21.93	22.91	23.94	25.02	26.15	27.34	28.59	29.91	31.29	32.74	34.26	35.86	37.54	39.11	41.00	42.98	45.05	47.23	49.63	52.03	54.55	57.19	59.96
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>165.72</b>	<b>165.98</b>	<b>166.35</b>	<b>166.85</b>	<b>167.47</b>	<b>168.23</b>	<b>169.14</b>	<b>170.18</b>	<b>171.38</b>	<b>172.74</b>	<b>174.27</b>	<b>175.97</b>	<b>177.85</b>	<b>179.92</b>	<b>182.18</b>	<b>184.73</b>	<b>187.50</b>	<b>190.49</b>	<b>193.71</b>	<b>197.18</b>	<b>200.91</b>	<b>204.91</b>	<b>209.18</b>	<b>213.73</b>	<b>218.56</b>

### Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	8.70	5.55	5.83	6.12	6.43	6.75	7.09	7.44	7.81	8.21	8.62	9.05	9.50	9.97	10.47	11.00	11.55	12.12	12.73	13.37	14.03	14.74	15.47	16.25	17.06	17.91
O&M expn	Rs/kWh	1.14	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	0.40	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	0.30	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.49	0.33	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.63	0.66	0.70	0.73	0.77	0.80	0.84	0.88	0.93	0.97
RoE	Rs/kWh	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.54</b>	<b>8.24</b>	<b>8.52</b>	<b>8.82</b>	<b>9.13</b>	<b>9.46</b>	<b>9.81</b>	<b>10.18</b>	<b>10.57</b>	<b>10.98</b>	<b>11.42</b>	<b>11.87</b>	<b>12.35</b>	<b>12.86</b>	<b>13.39</b>	<b>13.95</b>	<b>14.30</b>	<b>14.96</b>	<b>15.65</b>	<b>16.38</b>	<b>17.15</b>	<b>18.09</b>	<b>18.93</b>	<b>19.81</b>	<b>20.74</b>	<b>21.71</b>

### Levillised

Variable Cost (Rs/Unit)	5.55
Levillised Tariff (Fixed) (Rs/Unit)	2.83
<b>Levillised Tariff (Rs/Unit)</b>	<b>8.39</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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%	2.88%	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

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	7.28
Electricity Generation (Levillised) (Rs./Unit)	5.91
<b>Levillised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.2 G						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420.00	
			Total Equity Amount	Rs Lakh	180.00	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00
			Moratorium Period	years	0	
			Repayment Period (incl. Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate (equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate (Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3666.92
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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	MJ		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.40	21.30	22.24	23.23	24.28	25.37	26.52	27.73	29.00	30.34	31.74	33.22	34.76	36.39	38.09	39.69	41.60	43.62	45.73	47.94	50.37	52.81	55.37	58.05	60.86
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>166.00</b>	<b>166.27</b>	<b>166.66</b>	<b>167.17</b>	<b>167.81</b>	<b>168.59</b>	<b>169.51</b>	<b>170.58</b>	<b>171.80</b>	<b>173.18</b>	<b>174.72</b>	<b>176.45</b>	<b>178.35</b>	<b>180.44</b>	<b>182.73</b>	<b>170.31</b>	<b>175.61</b>	<b>181.13</b>	<b>186.89</b>	<b>192.89</b>	<b>207.45</b>	<b>213.98</b>	<b>220.77</b>	<b>227.86</b>	<b>235.25</b>

### Levillised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.85</b>	5.65	5.93	6.22	6.54	6.86	7.21	7.57	7.94	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.32	12.94	13.59	14.27	14.98	15.73	16.51	17.34	18.21
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.94	0.99
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.69</b>	<b>8.34</b>	<b>8.62</b>	<b>8.92</b>	<b>9.24</b>	<b>9.58</b>	<b>9.94</b>	<b>10.31</b>	<b>10.71</b>	<b>11.12</b>	<b>11.56</b>	<b>12.03</b>	<b>12.51</b>	<b>13.03</b>	<b>13.57</b>	<b>14.14</b>	<b>14.50</b>	<b>15.17</b>	<b>15.87</b>	<b>16.62</b>	<b>17.39</b>	<b>18.34</b>	<b>19.20</b>	<b>20.09</b>	<b>21.03</b>	<b>22.02</b>

### Levillised

Variable Cost (Rs/Unit)	<b>5.65</b>
Levillised Tariff (Fixed) (Rs/Unit)	<b>2.84</b>
<b>Levillised Tariff(Rs/Unit)</b>	<b>8.49</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	600.00

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	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	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depr.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	<b>7.28</b>
Electricity Generation (Levillised) (Rs./Unit)	<b>5.91</b>
<b>Levillised benefit (Rs./Unit)</b>	<b>0.12</b>

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Annexure 2.2 H						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420.00	
			Total Equity Amount	Rs Lakh	180.00	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
			Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (After 20 years)		21.52%				
Discount Rate ( equiv. to WACC)	%	8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3730.86
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

# CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		354.48	372.20	390.81	410.35	430.87	452.41	475.03	498.78	523.72	549.91	577.41	606.28	636.59	668.42	701.84	736.93	773.78	812.47	853.09	895.75	940.53	987.56	1,036.94	1,088.78	1,143.22

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.70	21.61	22.57	23.58	24.64	25.75	26.93	28.16	29.45	30.80	32.23	33.73	35.30	36.95	38.69	40.31	42.26	44.30	46.45	48.70	51.17	53.64	56.24	58.97	61.83
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>166.30</b>	<b>166.58</b>	<b>166.99</b>	<b>167.52</b>	<b>168.18</b>	<b>168.97</b>	<b>169.91</b>	<b>171.00</b>	<b>172.24</b>	<b>173.64</b>	<b>175.21</b>	<b>176.96</b>	<b>178.89</b>	<b>181.01</b>	<b>183.33</b>	<b>170.93</b>	<b>176.26</b>	<b>181.82</b>	<b>187.61</b>	<b>193.65</b>	<b>208.25</b>	<b>214.81</b>	<b>221.65</b>	<b>228.78</b>	<b>236.21</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.00</b>	5.74	6.03	6.33	6.65	6.98	7.33	7.70	8.08	8.49	8.91	9.36	9.82	10.32	10.83	11.37	11.94	12.54	13.17	13.82	14.51	15.24	16.00	16.80	17.64	18.52
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.65	0.68	0.72	0.75	0.79	0.83	0.87	0.91	0.96	1.00
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.85</b>	<b>8.44</b>	<b>8.73</b>	<b>9.04</b>	<b>9.36</b>	<b>9.71</b>	<b>10.07</b>	<b>10.45</b>	<b>10.85</b>	<b>11.28</b>	<b>11.72</b>	<b>12.20</b>	<b>12.69</b>	<b>13.21</b>	<b>13.76</b>	<b>14.34</b>	<b>14.71</b>	<b>15.39</b>	<b>16.11</b>	<b>16.86</b>	<b>17.65</b>	<b>18.62</b>	<b>19.48</b>	<b>20.39</b>	<b>21.35</b>	<b>22.35</b>

### Levilled

Variable Cost (Rs/Unit)	<b>5.74</b>
Levilled Tariff (Fixed) (Rs/Unit)	<b>2.85</b>
<b>Levilled Tariff(Rs/Unit)</b>	<b>8.59</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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	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	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.78	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levilled (Rs./Unit)	<b>7.28</b>
Electricity Generation (Levilled) (Rs./Unit)	<b>5.91</b>
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.2 I</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Others</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420.00		
			Total Equity amount	Rs Lakh	180.00		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420.00	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180.00
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
			<u>For Fixed Charges</u>				
<b>5</b>	<b>Working Capital</b>		O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)	15.00%		
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
			Interest On Working Capital	%	10.62%		
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	3921.59	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766.00		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		372.60	391.23	410.79	431.33	452.90	475.54	499.32	524.28	550.50	578.02	606.92	637.27	669.13	702.59	737.72	774.61	813.34	854.00	896.70	941.54	988.62	1,038.05	1,089.95	1,144.45	1,201.67

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		21.59	22.55	23.56	24.61	25.73	26.90	28.12	29.41	30.77	32.19	33.69	35.26	36.91	38.64	40.46	42.17	44.21	46.35	48.60	50.95	53.54	56.13	58.86	61.71	64.71
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>167.19</b>	<b>167.52</b>	<b>167.97</b>	<b>168.55</b>	<b>169.26</b>	<b>170.11</b>	<b>171.11</b>	<b>172.25</b>	<b>173.56</b>	<b>175.03</b>	<b>176.67</b>	<b>178.49</b>	<b>180.49</b>	<b>182.69</b>	<b>185.10</b>	<b>172.79</b>	<b>178.21</b>	<b>183.87</b>	<b>189.76</b>	<b>195.90</b>	<b>210.62</b>	<b>217.30</b>	<b>224.26</b>	<b>231.52</b>	<b>239.10</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.46</b>	6.04	6.34	6.66	6.99	7.34	7.71	8.09	8.50	8.92	9.37	9.83	10.33	10.84	11.38	11.95	12.55	13.18	13.84	14.53	15.26	16.02	16.82	17.66	18.54	19.47
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.53</b>	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.68	0.72	0.75	0.79	0.83	0.87	0.91	0.95	1.00	1.05
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.33</b>	<b>8.75</b>	<b>9.05</b>	<b>9.38</b>	<b>9.72</b>	<b>10.08</b>	<b>10.46</b>	<b>10.86</b>	<b>11.29</b>	<b>11.73</b>	<b>12.20</b>	<b>12.70</b>	<b>13.22</b>	<b>13.77</b>	<b>14.35</b>	<b>14.95</b>	<b>15.35</b>	<b>16.07</b>	<b>16.82</b>	<b>17.61</b>	<b>18.43</b>	<b>19.43</b>	<b>20.34</b>	<b>21.30</b>	<b>22.30</b>	<b>23.35</b>

Variable Cost (Rs/Unit)	<b>6.04</b>
Levelised Tariff (Fixed) (Rs/Unit)	<b>2.87</b>
<b>Levelised Tariff (Rs/Unit)</b>	<b>8.91</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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	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	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	<b>7.28</b>
Electricity Generation (Levelised) (Rs./Unit)	<b>5.91</b>
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 A						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
					Discount Rate ( equiv. to WACC)	%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3666.92
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		20.42	21.32	22.26	23.25	24.30	25.39	26.54	27.75	29.02	30.36	31.76	33.23	34.78	36.40	38.11	39.70	41.62	43.63	45.74	47.95	50.38	52.82	55.38	58.06	60.88
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>167.78</b>	<b>168.00</b>	<b>168.34</b>	<b>168.80</b>	<b>169.40</b>	<b>170.13</b>	<b>171.00</b>	<b>172.02</b>	<b>173.19</b>	<b>174.53</b>	<b>176.03</b>	<b>177.70</b>	<b>179.56</b>	<b>181.60</b>	<b>183.85</b>	<b>187.10</b>	<b>176.40</b>	<b>181.92</b>	<b>187.68</b>	<b>193.68</b>	<b>208.40</b>	<b>214.92</b>	<b>221.72</b>	<b>228.80</b>	<b>236.19</b>

### Levillised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	8.65	5.52	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.56	8.99	9.44	9.91	10.41	10.93	11.48	12.05	12.65	13.28	13.95	14.65	15.38	16.15	16.96	17.80
O&M expn	Rs/kWh	1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	0.40	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	0.30	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.49	0.32	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	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.84	0.88	0.92	0.96
RoE	Rs/kWh	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.45</b>	<b>8.18</b>	<b>8.46</b>	<b>8.75</b>	<b>9.06</b>	<b>9.39</b>	<b>9.74</b>	<b>10.11</b>	<b>10.49</b>	<b>10.90</b>	<b>11.33</b>	<b>11.78</b>	<b>12.26</b>	<b>12.76</b>	<b>13.29</b>	<b>13.84</b>	<b>14.19</b>	<b>14.84</b>	<b>15.53</b>	<b>16.26</b>	<b>17.02</b>	<b>17.95</b>	<b>18.78</b>	<b>19.66</b>	<b>20.58</b>	<b>21.55</b>

### Levillised

Variable Cost (Rs./Unit)	5.52
Levillised Tariff (Fixed) (Rs./Unit)	2.80
<b>Levillised Tariff(Rs./Unit)</b>	<b>8.32</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-26.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-8.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs./Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levillised (Rs./Unit)	7.42
Electricity Generation (Levillised) (Rs./MU)	6.04
<b>Levillised benefit (Rs./Unit)</b>	<b>0.12</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.3 B</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>3</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	427.70		
			Total Equity amount	Rs Lakh	183.30		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expences)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
			Interest On Working Capital		%	10.62%	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4174.07	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		



# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		396.59	416.42	437.24	459.10	482.05	506.16	531.46	558.04	585.94	615.24	646.00	678.30	712.21	747.82	785.21	824.48	865.70	908.98	954.43	####	1,052.26	1,104.88	1,160.12	1,218.13	1,279.03
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		22.80	23.81	24.88	26.01	27.19	28.43	29.73	31.10	32.53	34.04	35.63	37.30	39.05	40.88	42.81	44.64	46.80	49.07	51.45	53.95	56.69	59.44	62.33	65.36	68.54
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	39.45	39.45	39.45	39.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>170.15</b>	<b>170.49</b>	<b>170.96</b>	<b>171.55</b>	<b>172.29</b>	<b>173.16</b>	<b>174.18</b>	<b>175.36</b>	<b>176.70</b>	<b>178.21</b>	<b>179.90</b>	<b>181.76</b>	<b>183.82</b>	<b>186.08</b>	<b>188.55</b>	<b>176.04</b>	<b>181.59</b>	<b>187.37</b>	<b>193.40</b>	<b>199.68</b>	<b>214.70</b>	<b>221.54</b>	<b>228.67</b>	<b>236.10</b>	<b>243.85</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.84</b>	6.28	6.60	6.93	7.27	7.64	8.02	8.42	8.84	9.28	9.75	10.24	10.75	11.28	11.85	12.44	13.06	13.72	14.40	15.12	15.88	16.67	17.51	18.38	19.30	20.27
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.54</b>	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.56	0.59	0.62	0.65	0.68	0.71	0.74	0.78	0.82	0.85	0.90	0.94	0.99	1.04	1.09
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.62	0.62	0.62	0.62	0.62
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.70</b>	<b>8.98</b>	<b>9.30</b>	<b>9.64</b>	<b>9.99</b>	<b>10.37</b>	<b>10.76</b>	<b>11.18</b>	<b>11.62</b>	<b>12.08</b>	<b>12.57</b>	<b>13.09</b>	<b>13.63</b>	<b>14.20</b>	<b>14.80</b>	<b>15.43</b>	<b>15.85</b>	<b>16.59</b>	<b>17.37</b>	<b>18.19</b>	<b>19.04</b>	<b>20.07</b>	<b>21.02</b>	<b>22.00</b>	<b>23.04</b>	<b>24.13</b>

Variable Cost (Rs/Unit)	<b>6.28</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.86
<b>Levelised Tariff (Rs/Unit)</b>	<b>9.14</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-25.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-8.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	7.42
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 C						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate (equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	4268.88
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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			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	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	21	22	23	24	25		
Biomass Cost	Rs. Lakh			405.60	425.88	447.17	469.53	493.00	517.65	543.54	570.71	599.25	629.21	660.67	693.71	728.39	764.81	803.05	843.20	885.36	929.63	976.11	####	1,076.17	1,129.97	1,186.47	1,245.80	1,308.09		
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			50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65		
Depreciation	Rs Lakh			28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51		
Interest on term loan	Rs Lakh			37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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			23.24	24.28	25.37	26.52	27.73	28.99	30.32	31.72	33.19	34.73	36.35	38.06	39.84	41.72	43.69	45.66	47.77	50.09	52.52	55.08	57.87	60.68	63.63	66.72	69.97		
Return on Equity	Rs Lakh			31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09		
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>			<b>170.60</b>	<b>170.96</b>	<b>171.45</b>	<b>172.07</b>	<b>172.83</b>	<b>173.73</b>	<b>174.78</b>	<b>175.99</b>	<b>177.36</b>	<b>178.90</b>	<b>180.62</b>	<b>182.52</b>	<b>184.62</b>	<b>186.92</b>	<b>189.43</b>	<b>192.16</b>	<b>195.13</b>	<b>198.36</b>	<b>201.81</b>	<b>205.58</b>	<b>209.67</b>	<b>214.11</b>	<b>218.91</b>	<b>224.00</b>	<b>229.47</b>	<b>235.34</b>	<b>241.61</b>

### Levelised tariff corresponding to Useful life

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	
Per unit Variable Cost	Rs/kWh			10.07	6.43	6.75	7.08	7.44	7.81	8.20	8.61	9.04	9.49	9.97	10.47	10.99	11.54	12.12	12.72	13.36	14.03	14.73	15.47	16.24	17.05	17.90	18.80	19.74	20.73
O&M expn	Rs/kWh			1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh			0.40	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	0.45	0.45	0.45	0.45	
Int. on term loan	Rs/kWh			0.30	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh			0.56	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.60	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.87	0.92	0.96	1.01	1.06	1.11
RoE	Rs/kWh			0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	
<b>Total COG</b>	<b>Rs/kWh</b>			<b>12.94</b>	<b>9.13</b>	<b>9.46</b>	<b>9.80</b>	<b>10.17</b>	<b>10.55</b>	<b>10.95</b>	<b>11.38</b>	<b>11.83</b>	<b>12.30</b>	<b>12.80</b>	<b>13.33</b>	<b>13.88</b>	<b>14.47</b>	<b>15.08</b>	<b>15.72</b>	<b>16.16</b>	<b>16.92</b>	<b>17.71</b>	<b>18.55</b>	<b>19.42</b>	<b>20.47</b>	<b>21.43</b>	<b>22.44</b>	<b>23.50</b>	<b>24.61</b>

Variable Cost (Rs/Unit)	6.43
Levelised Tariff (Fixed) (Rs/Unit)	2.87
<b>Levelised Tariff (Rs/Unit)</b>	<b>9.30</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-25.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-9.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	0.15	

Tax Benefit Levelised (Rs./Unit)	7.42
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 D						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
Discount Rate ( equiv. to WACC)	%	8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	4365.90
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		414.81	435.55	457.33	480.20	504.21	529.42	555.89	583.68	612.87	643.51	675.69	709.47	744.95	782.19	821.30	862.37	905.49	950.76	998.30	####	1,100.62	1,155.65	1,213.44	1,274.11	1,337.81

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		23.70	24.76	25.87	27.05	28.28	29.57	30.93	32.36	33.86	35.44	37.09	38.83	40.66	42.58	44.59	46.51	48.76	51.13	53.62	56.23	59.07	61.95	64.96	68.12	71.44
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>171.05</b>	<b>171.44</b>	<b>171.95</b>	<b>172.59</b>	<b>173.38</b>	<b>174.31</b>	<b>175.39</b>	<b>176.63</b>	<b>178.03</b>	<b>179.61</b>	<b>181.36</b>	<b>183.30</b>	<b>185.44</b>	<b>187.78</b>	<b>190.33</b>	<b>177.91</b>	<b>183.55</b>	<b>189.43</b>	<b>195.56</b>	<b>201.96</b>	<b>217.09</b>	<b>224.04</b>	<b>231.30</b>	<b>238.86</b>	<b>246.75</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>10.30</b>	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82	16.61	17.44	18.31	19.23	20.19	21.20
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.57</b>	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.77	0.81	0.85	0.89	0.94	0.98	1.03	1.08	1.13
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.18</b>	<b>9.28</b>	<b>9.62</b>	<b>9.97</b>	<b>10.34</b>	<b>10.74</b>	<b>11.15</b>	<b>11.59</b>	<b>12.05</b>	<b>12.53</b>	<b>13.04</b>	<b>13.58</b>	<b>14.15</b>	<b>14.74</b>	<b>15.37</b>	<b>16.03</b>	<b>16.48</b>	<b>17.25</b>	<b>18.07</b>	<b>18.92</b>	<b>19.81</b>	<b>20.88</b>	<b>21.86</b>	<b>22.89</b>	<b>23.97</b>	<b>25.11</b>

Variable Cost (Rs/Unit)	<b>6.57</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.88
<b>Levilled Tariff (Rs/Unit)</b>	<b>9.45</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	2.88%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-25.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.01	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-9.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.42
Electricity Generation (Levilled) (Rs./Unit)	6.04
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 E							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	427.70		
			Total Equity Amount	Rs Lakh	183.30		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30	
				Return on Equity (upto 20 years)	% p.a	16.96%	
		Return on Equity (After 20 years)		21.52%			
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
				MAT Rate	%	17.47%	
				<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
	Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
		<u>Biomass</u>	Base Price	Rs/T	3643.76		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		346.20	363.51	381.69	400.77	420.81	441.85	463.94	487.14	511.50	537.07	563.93	592.12	621.73	652.81	685.46	719.73	755.71	793.50	833.18	874.83	918.58	964.50	1,012.73	1,063.37	1,116.53
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		20.31	21.20	22.14	23.13	24.17	25.25	26.40	27.60	28.86	30.19	31.58	33.05	34.58	36.20	37.89	39.47	41.38	43.38	45.47	47.67	50.10	52.52	55.06	57.73	60.53
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>167.67</b>	<b>167.88</b>	<b>168.22</b>	<b>168.68</b>	<b>169.27</b>	<b>169.99</b>	<b>170.85</b>	<b>171.87</b>	<b>173.03</b>	<b>174.36</b>	<b>175.85</b>	<b>177.51</b>	<b>179.36</b>	<b>181.40</b>	<b>183.63</b>	<b>187.07</b>	<b>186.16</b>	<b>187.42</b>	<b>187.42</b>	<b>193.40</b>	<b>208.11</b>	<b>214.62</b>	<b>221.40</b>	<b>228.47</b>	<b>235.84</b>

### Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	5.49	5.49	5.76	6.05	6.35	6.67	7.00	7.35	7.72	8.10	8.51	8.93	9.38	9.85	10.34	10.86	11.40	11.97	12.57	13.20	13.86	14.55	15.28	16.05	16.85	17.69
O&M expn	Rs/kWh	1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	0.40	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
Int. on term loan	Rs/kWh	0.30	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh	0.48	0.32	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.87	0.91	0.96
RoE	Rs/kWh	0.50	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.62	0.62	0.62	0.62	
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.39</b>	<b>8.14</b>	<b>8.42</b>	<b>8.71</b>	<b>9.02</b>	<b>9.35</b>	<b>9.69</b>	<b>10.06</b>	<b>10.44</b>	<b>10.85</b>	<b>11.27</b>	<b>11.72</b>	<b>12.19</b>	<b>12.69</b>	<b>13.22</b>	<b>13.77</b>	<b>14.11</b>	<b>14.76</b>	<b>15.45</b>	<b>16.17</b>	<b>16.93</b>	<b>17.85</b>	<b>18.68</b>	<b>19.55</b>	<b>20.47</b>	<b>21.43</b>

Variable Cost (Rs/Unit)	5.49
Levelised Tariff (Fixed) (Rs/Unit)	2.80
<b>Levelised Tariff(Rs/Unit)</b>	<b>8.28</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Opening	%	100.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Allowed during the year	%	30.00%	35.00%	21.00%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Closing	%	70.00%	35.00%	21.00%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-26.61	-29.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-8.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	7.42
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 F						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (After 20 years)		21.52%				
		Discount Rate ( equiv. to WACC)	%	8.35%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>			
			Base Price	Rs/T	3607.38	
			GCV-Biomass	Kcal/kg	3100.00	
		Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	





**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.3 G</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>3</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	427.70		
			Total Equity Amount	Rs Lakh	183.30		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
			Interest On Working Capital		%	10.62%	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	3666.92	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		20.42	21.32	22.26	23.25	24.30	25.39	26.54	27.75	29.02	30.36	31.76	33.23	34.78	36.40	38.11	39.70	41.62	43.63	45.74	47.95	50.38	52.82	55.38	58.06	60.88
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>167.78</b>	<b>168.00</b>	<b>168.34</b>	<b>168.80</b>	<b>169.40</b>	<b>170.13</b>	<b>171.00</b>	<b>172.02</b>	<b>173.19</b>	<b>174.53</b>	<b>176.03</b>	<b>177.70</b>	<b>179.56</b>	<b>181.60</b>	<b>183.85</b>	<b>171.10</b>	<b>176.40</b>	<b>181.92</b>	<b>187.68</b>	<b>193.68</b>	<b>208.40</b>	<b>214.92</b>	<b>221.72</b>	<b>228.80</b>	<b>236.19</b>

### Levelised tariff corresponding to Useful life

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	<b>8.65</b>	5.52	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.56	8.99	9.44	9.91	10.41	10.93	11.48	12.05	12.65	13.28	13.95	14.65	15.38	16.15	16.96	17.80
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	0.32	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	0.60	0.63	0.66	0.69	0.72	0.76	0.80	0.84	0.88	0.92	0.96
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.45</b>	<b>8.18</b>	<b>8.46</b>	<b>8.75</b>	<b>9.06</b>	<b>9.39</b>	<b>9.74</b>	<b>10.11</b>	<b>10.49</b>	<b>10.90</b>	<b>11.33</b>	<b>11.78</b>	<b>12.26</b>	<b>12.76</b>	<b>13.29</b>	<b>13.84</b>	<b>14.19</b>	<b>14.84</b>	<b>15.53</b>	<b>16.26</b>	<b>17.02</b>	<b>17.95</b>	<b>18.78</b>	<b>19.66</b>	<b>20.58</b>	<b>21.55</b>

Variable Cost (Rs/Unit)	<b>5.52</b>
Levelised Tariff (Fixed) (Rs/Unit)	<b>2.80</b>
<b>Levelised Tariff (Rs/Unit)</b>	<b>8.32</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.8%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-25.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-8.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	<b>7.42</b>
Electricity Generation (Levelised) (Rs./kWh)	<b>6.04</b>
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.3 H									
Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh									
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters				
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1				
			Auxiliary Consumption	%	10.00%				
			PLF	%	80.00%				
			Useful Life	Years	25				
			Power Plant Cost	Rs Lakh/MW	611.00				
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00				
			<u>Debt: Equity</u>	Debt	%	70%			
				Equity	%	30%			
				Total Debt Amount	Rs Lakh	427.70			
			Total Equity Amount	Rs Lakh	183.30				
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70			
				Moratorium Period	years	0			
				Repayment Period( incld Moratorium)	years	15			
			<u>Equity Component</u>	Interest Rate	%	9.12%			
				Equity amount	Rs Lakh	183.30			
				Return on Equity (upto 20 years)	% p.a	16.96%			
			Return on Equity (After 20 years)			21.52%			
			Discount Rate ( equiv. to WACC)	%		8.35%			
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
						MAT Rate	%	17.47%	
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%			
	Depreciation Rate 16th year onwards	%				2.00%			
5	Working Capital	<u>For Fixed Charges</u>				O&M Charges	Months	1	
						Maintenance Spare	(% of O&M exepenses)		15.00%
						Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>	Biomass Stock	Months	4			
				Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00				
			During stabilization period	Kcal/kWh	4200.00				
		<u>Biomass</u>	Base Price	Rs/T	3730.86				
			GCV-Biomass	Kcal/kg	3100.00				
			-						
		Biomass Price Escalation Factor			5.00%				
		7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
O & M Expenses Escalation	%				3.84%				
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766				



CERC RE Tariff Order for FY 2022-23

Annexure 2.3 I						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611.00	
3	Financial Assumptions	Debt: Equity	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			Debt Component	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			Equity Component	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
			For Fixed Charges			
5	Working Capital	For Fixed Charges	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			For Variable Charges			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
			6	Fuel Related Assumptions	Heat Rate	After stabilization period
During stabilization period	Kcal/kWh	4200.00				
Biomass						
Base Price	Rs/T	3921.59				
GCV-Biomass	Kcal/kg	3100.00				
7	Operation & Maintenance	O&M Expenses	Biomass Price Escalation Factor		5.00%	
			O & M Expenses	Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



CERC RE Tariff Order for FY 2022-23

Annexure 2.4 A						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
2	Project Cost	Capital Cost/MW	Useful Life	Years	25	
			Power Plant Cost	Rs Lakh/MW	652.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
Discount Rate ( equiv. to WACC)	%	8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3666.92
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		348.40	365.82	384.11	403.32	423.48	444.66	466.89	490.24	514.75	540.48	567.51	595.88	625.68	656.96	689.81	724.30	760.52	798.54	838.47	880.39	924.41	970.63	1,019.16	1,070.12	1,123.63

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		20.51	21.40	22.35	23.34	24.38	25.47	26.62	27.82	29.09	30.42	31.82	33.29	34.84	36.46	38.16	39.74	41.65	43.66	45.77	47.99	50.43	52.87	55.42	58.11	60.92
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>174.39</b>	<b>174.44</b>	<b>174.60</b>	<b>174.89</b>	<b>175.31</b>	<b>175.86</b>	<b>176.56</b>	<b>177.40</b>	<b>178.39</b>	<b>179.55</b>	<b>180.87</b>	<b>182.37</b>	<b>184.05</b>	<b>185.92</b>	<b>187.99</b>	<b>174.04</b>	<b>179.34</b>	<b>184.87</b>	<b>190.62</b>	<b>196.62</b>	<b>211.91</b>	<b>218.43</b>	<b>225.23</b>	<b>232.32</b>	<b>239.70</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.85</b>	5.65	5.93	6.22	6.54	6.86	7.21	7.57	7.94	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.32	12.94	13.59	14.27	14.98	15.73	16.51	17.34	18.21
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.94	0.99
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.79</b>	<b>8.47</b>	<b>8.75</b>	<b>9.05</b>	<b>9.37</b>	<b>9.70</b>	<b>10.05</b>	<b>10.43</b>	<b>10.82</b>	<b>11.23</b>	<b>11.67</b>	<b>12.13</b>	<b>12.61</b>	<b>13.12</b>	<b>13.66</b>	<b>14.22</b>	<b>14.56</b>	<b>15.23</b>	<b>15.94</b>	<b>16.68</b>	<b>17.45</b>	<b>18.41</b>	<b>19.27</b>	<b>20.16</b>	<b>21.10</b>	<b>22.09</b>

Variable Cost (Rs/Unit)	<b>5.65</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.95
<b>Levelised Tariff (Rs/Unit)</b>	<b>8.59</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	7.92
Electricity Generation (Levelised) (Rs./Unit)	5.91
<b>Levelised benefit (Rs./Unit)</b>	<b>0.13</b>

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Annexure 2.4 B							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	456.40		
			Total Equity Amount	Rs Lakh	195.60		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%		
				Depreciation Rate 16th year onwards	%	4.67%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4174.07	
				GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		396.59	416.42	437.24	459.10	482.05	506.16	531.46	558.04	585.94	615.24	646.00	678.30	712.21	747.82	785.21	824.48	865.70	908.98	954.43	####	1,052.26	1,104.88	1,160.12	1,218.13	1,279.03

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		22.88	23.90	24.97	26.09	27.26	28.50	29.80	31.17	32.60	34.11	35.69	37.36	39.11	40.94	42.87	44.88	46.84	48.84	50.88	52.97	55.10	57.27	59.49	61.75	64.05
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>176.77</b>	<b>176.93</b>	<b>177.22</b>	<b>177.64</b>	<b>178.20</b>	<b>178.89</b>	<b>179.74</b>	<b>180.74</b>	<b>181.91</b>	<b>183.24</b>	<b>184.75</b>	<b>186.44</b>	<b>188.32</b>	<b>190.40</b>	<b>192.69</b>	<b>195.19</b>	<b>197.89</b>	<b>200.70</b>	<b>202.63</b>	<b>218.22</b>	<b>225.05</b>	<b>232.18</b>	<b>239.61</b>	<b>247.37</b>	

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>10.07</b>	6.43	6.75	7.09	7.44	7.81	8.20	8.61	9.04	9.49	9.97	10.47	10.99	11.54	12.12	12.72	13.36	14.03	14.73	15.47	16.24	17.05	17.90	18.80	19.74	20.73
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.56</b>	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.51	0.53	0.55	0.58	0.61	0.63	0.66	0.69	0.72	0.76	0.80	0.83	0.87	0.92	0.96	1.01	1.06	1.11
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.08</b>	<b>9.29</b>	<b>9.61</b>	<b>9.96</b>	<b>10.32</b>	<b>10.70</b>	<b>11.10</b>	<b>11.52</b>	<b>11.97</b>	<b>12.44</b>	<b>12.94</b>	<b>13.46</b>	<b>14.01</b>	<b>14.59</b>	<b>15.20</b>	<b>15.85</b>	<b>16.26</b>	<b>17.02</b>	<b>17.81</b>	<b>18.65</b>	<b>19.52</b>	<b>20.59</b>	<b>21.55</b>	<b>22.56</b>	<b>23.62</b>	<b>24.73</b>

Variable Cost (Rs/Unit)	<b>6.43</b>
Levelised Tariff (Fixed) (Rs/Unit)	3.01
<b>Levelised Tariff(Rs/Unit)</b>	<b>9.43</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levelised (Rs./Unit)	7.92
Electricity Generation (Levelised) (Rs./Unit)	5.91
<b>Levelised benefit (Rs./Unit)</b>	<b>0.13</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.4 C					
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra					
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	12.00%
			PLF	%	80.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M exepenses)		15.00%
		Receivables for Debtors		Months	1.5
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
	Interest On Working Capital		%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00
			During stabilization period	Kcal/kWh	4200.00
		<u>Biomass</u>	Base Price	Rs/T	4268.88
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05
		O & M Expenses Escalation		%	3.84%
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		405.60	425.88	447.17	469.53	493.00	517.65	543.54	570.71	599.25	629.21	660.67	693.71	728.39	764.81	803.05	843.20	885.36	929.63	976.11	####	1,076.17	1,129.97	1,186.47	1,245.80	1,308.09
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		23.33	24.37	25.46	26.60	27.80	29.07	30.40	31.79	33.26	34.80	36.42	38.12	39.90	41.78	43.75	45.80	47.81	50.13	52.56	55.12	57.91	60.73	63.68	66.77	70.02
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>177.21</b>	<b>177.40</b>	<b>177.71</b>	<b>178.15</b>	<b>178.74</b>	<b>179.46</b>	<b>180.34</b>	<b>181.37</b>	<b>182.56</b>	<b>183.93</b>	<b>185.47</b>	<b>187.20</b>	<b>189.12</b>	<b>191.24</b>	<b>193.57</b>	<b>197.91</b>	<b>185.50</b>	<b>191.33</b>	<b>197.41</b>	<b>203.75</b>	<b>219.40</b>	<b>226.29</b>	<b>233.48</b>	<b>240.98</b>	<b>248.80</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>10.30</b>	6.57	6.90	7.25	7.61	7.99	8.39	8.81	9.25	9.71	10.20	10.71	11.24	11.80	12.39	13.01	13.66	14.35	15.06	15.82	16.61	17.44	18.31	19.23	20.19	21.20
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.57</b>	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.56	0.59	0.62	0.65	0.68	0.71	0.74	0.77	0.81	0.85	0.89	0.94	0.98	1.03	1.08	1.13
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.32</b>	<b>9.44</b>	<b>9.78</b>	<b>10.13</b>	<b>10.50</b>	<b>10.88</b>	<b>11.30</b>	<b>11.73</b>	<b>12.19</b>	<b>12.67</b>	<b>13.18</b>	<b>13.71</b>	<b>14.27</b>	<b>14.87</b>	<b>15.49</b>	<b>16.15</b>	<b>16.58</b>	<b>17.35</b>	<b>18.16</b>	<b>19.02</b>	<b>19.91</b>	<b>20.99</b>	<b>21.98</b>	<b>23.01</b>	<b>24.09</b>	<b>25.23</b>

Variable Cost (Rs/Unit)	<b>6.57</b>
Levelised Tariff (Fixed) (Rs/Unit)	3.02
<b>Levelised Tariff (Rs/Unit)</b>	<b>9.59</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs /Unit)	7.92
Electricity Generation (Levelised) (Rs./MU)	5.91
<b>Levelised benefit (Rs./Unit)</b>	<b>0.13</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.4 D							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	456.40		
			Total Equity Amount	Rs Lakh	195.60		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate (equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M exepenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
			Interest On Working Capital		%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00		
			During stabilization period	Kcal/kWh	4200.00		
			<u>Biomass</u>	Base Price	Rs/T	4365.90	
			-	GCV-Biomass	Kcal/kg	3100.00	
				Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		414.81	435.55	457.33	480.20	504.21	529.42	555.89	583.68	612.87	643.51	675.69	709.47	744.95	782.19	821.30	862.37	905.49	950.76	998.30	####	1,100.62	1,155.65	1,213.44	1,274.11	1,337.81

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		23.78	24.84	25.96	27.13	28.36	29.65	31.01	32.43	33.93	35.51	37.16	38.90	40.72	42.64	44.65	46.55	48.80	51.17	53.66	56.26	59.12	61.99	65.01	68.17	71.49
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>177.67</b>	<b>177.88</b>	<b>178.21</b>	<b>178.68</b>	<b>179.29</b>	<b>180.04</b>	<b>180.95</b>	<b>182.01</b>	<b>183.23</b>	<b>184.63</b>	<b>186.21</b>	<b>187.97</b>	<b>189.93</b>	<b>192.10</b>	<b>194.47</b>	<b>180.85</b>	<b>186.49</b>	<b>192.37</b>	<b>198.51</b>	<b>204.90</b>	<b>220.60</b>	<b>227.56</b>	<b>234.81</b>	<b>242.38</b>	<b>250.27</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>10.53</b>	6.72	7.06	7.41	7.78	8.17	8.58	9.01	9.46	9.93	10.43	10.95	11.50	12.07	12.67	13.31	13.97	14.67	15.41	16.18	16.99	17.83	18.73	19.66	20.65	21.68
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.58</b>	0.39	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.58	0.60	0.63	0.66	0.69	0.72	0.75	0.79	0.83	0.87	0.91	0.96	1.00	1.05	1.10	1.16
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>13.56</b>	<b>9.60</b>	<b>9.94</b>	<b>10.30</b>	<b>10.68</b>	<b>11.08</b>	<b>11.50</b>	<b>11.94</b>	<b>12.41</b>	<b>12.90</b>	<b>13.42</b>	<b>13.97</b>	<b>14.54</b>	<b>15.15</b>	<b>15.79</b>	<b>16.46</b>	<b>16.90</b>	<b>17.69</b>	<b>18.52</b>	<b>19.39</b>	<b>20.31</b>	<b>21.41</b>	<b>22.41</b>	<b>23.47</b>	<b>24.57</b>	<b>25.73</b>

Variable Cost (Rs/Unit)	6.72
Levelised Tariff (Fixed) (Rs/Unit)	3.03
<b>Levelised Tariff (Rs/Unit)</b>	<b>9.75</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

Years	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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	16.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	7.92
Electricity Generation (Levelised) (Rs./Unit)	5.91
<b>Levelised benefit (Rs./Unit)</b>	<b>0.13</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.4 E						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
				Moratorium Period	years	0
				Repayment Period( incld Moratorium)	years	15
				Interest Rate	%	9.12%
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
				Return on Equity (upto 20 years)	% p.a	16.96%
				Return on Equity (After 20 years)		21.52%
		Discount Rate ( equiv. to WACC)	%	8.35%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
		<u>Biomass</u>	Base Price	Rs/T	3643.76	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
		O & M Expenses Escalation		%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	





CERC RE Tariff Order for FY 2022-23

Annexure 2.4 F								
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu								
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters			
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1			
			Auxiliary Consumption	%	12.00%			
			PLF	%	80.00%			
			Useful Life	Years	25			
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00			
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%			
			Equity	%	30%			
			Total Debt Amount	Rs Lakh	456.40			
			Total Equity Amount	Rs Lakh	195.60			
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40		
			Moratorium Period	years	0			
			Repayment Period( incld Moratorium)	years	15			
			Interest Rate	%	9.12%			
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60		
			Return on Equity (upto 20 years)	% p.a	16.96%			
			Return on Equity (After 20 years)		21.52%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%			
			MAT Rate	%	17.47%			
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%			
5	Working Capital	<u>For Fixed Charges</u>						
			O&M Charges	Months	1			
			Maintenance Spare	(% of O&M exepenses)		15.00%		
			Receivables for Debtors	Months	1.5			
			<u>For Variable Charges</u>					
			Biomass Stock	Months	4			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00			
			During stabilization period	Kcal/kWh	4200.00			
			<u>Biomass</u>	Base Price	Rs/T	3607.38		
			GCV-Biomass	Kcal/kg	3100.00			
			Biomass Price Escalation Factor		5.00%			
			7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05
						O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766			

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable 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
Biomass Cost	Rs. Lakh		342.74	359.88	377.88	396.77	416.61	437.44	459.31	482.28	506.39	531.71	558.30	586.21	615.52	646.30	678.61	712.54	748.17	785.58	824.86	866.10	909.40	954.87	1,002.62	1,052.75	1,105.39
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		20.23	21.11	22.04	23.01	24.04	25.11	26.24	27.43	28.68	29.99	31.37	32.82	34.34	35.93	37.61	39.16	41.05	43.03	45.10	47.28	49.69	52.09	54.61	57.25	60.02
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>174.11</b>	<b>174.14</b>	<b>174.29</b>	<b>174.57</b>	<b>174.97</b>	<b>175.51</b>	<b>176.18</b>	<b>177.01</b>	<b>177.98</b>	<b>179.12</b>	<b>180.42</b>	<b>181.90</b>	<b>183.55</b>	<b>185.39</b>	<b>187.43</b>	<b>173.46</b>	<b>178.73</b>	<b>184.23</b>	<b>189.95</b>	<b>195.92</b>	<b>211.17</b>	<b>217.65</b>	<b>224.41</b>	<b>231.46</b>	<b>238.80</b>

### Levelling tariff corresponding to Useful life

Per Unit Cost of Generation	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
Per unit Variable Cost	Rs/kWh	<b>8.70</b>	5.55	5.83	6.12	6.43	6.75	7.09	7.44	7.81	8.21	8.62	9.05	9.50	9.97	10.47	11.00	11.55	12.12	12.73	13.37	14.03	14.74	15.47	16.25	17.06	17.91
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	0.33	0.34	0.36	0.37	0.39	0.41	0.43	0.44	0.46	0.49	0.51	0.53	0.56	0.58	0.61	0.63	0.67	0.70	0.73	0.77	0.81	0.84	0.88	0.93	0.97
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.64</b>	<b>8.38</b>	<b>8.65</b>	<b>8.95</b>	<b>9.26</b>	<b>9.59</b>	<b>9.93</b>	<b>10.30</b>	<b>10.68</b>	<b>11.09</b>	<b>11.52</b>	<b>11.97</b>	<b>12.45</b>	<b>12.95</b>	<b>13.48</b>	<b>14.03</b>	<b>14.36</b>	<b>15.02</b>	<b>15.71</b>	<b>16.44</b>	<b>17.21</b>	<b>18.16</b>	<b>19.00</b>	<b>19.88</b>	<b>20.81</b>	<b>21.78</b>

Variable Cost (Rs/Unit)	5.55
Levelling Tariff (Fixed) (Rs/Unit)	2.94
<b>Levelling Tariff (Rs/Unit)</b>	<b>8.49</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levellised (Rs /Unit)	7.92
Electricity Generation (Levelling) (Rs /Unit)	5.91
<b>Levelling benefit (Rs/Unit)</b>	<b>0.13</b>

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Annexure 2.4 G						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	4	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00	
3	Financial Assumptions	Debt: Equity	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			Debt Component	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			Equity Component	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			For Variable Charges			
			Biomass Stock	Months	4	
Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			Biomass	Base Price	Rs/T	3666.92
			-	GCV-Biomass	Kcal/kg	3100.00
				Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



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Annexure 2.4 H						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (After 20 years)		21.52%				
Discount Rate ( equiv. to WACC)	%	8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			<u>Biomass</u>	Base Price	Rs/T	3730.86
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



CERC RE Tariff Order for FY 2022-23

Annexure 2.4 I						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652.00	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amout	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
			<u>For Fixed Charges</u>			
			O&M Charges	Months	1	
Maintenance Spare	(% of O&M exepenses)		15.00%			
Receivables for Debtors	Months	1.5				
<u>For Variable Charges</u>						
Biomass Stock	Months	4				
Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4200.00	
			During stabilization period	Kcal/kWh	4200.00	
			Base Price	Rs/T	3921.59	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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	MJ		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		372.60	391.23	410.79	431.33	452.90	475.54	499.32	524.28	550.50	578.02	606.92	637.27	669.13	702.59	737.72	774.61	813.34	854.00	896.70	941.54	988.62	1,038.05	1,089.95	1,144.45	1,201.67

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		21.70	22.66	23.66	24.72	25.83	26.99	28.22	29.50	30.86	32.28	33.77	35.34	36.98	38.71	40.53	42.22	44.26	46.40	48.65	51.00	53.60	56.19	58.92	61.77	64.77
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>175.59</b>	<b>175.69</b>	<b>175.92</b>	<b>176.27</b>	<b>176.76</b>	<b>177.38</b>	<b>178.16</b>	<b>179.08</b>	<b>180.16</b>	<b>181.40</b>	<b>182.82</b>	<b>184.41</b>	<b>186.19</b>	<b>188.17</b>	<b>190.35</b>	<b>176.53</b>	<b>181.95</b>	<b>187.60</b>	<b>193.50</b>	<b>199.64</b>	<b>215.08</b>	<b>221.76</b>	<b>228.72</b>	<b>235.98</b>	<b>243.55</b>

### Levillised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.46</b>	6.04	6.34	6.66	6.99	7.34	7.71	8.09	8.50	8.92	9.37	9.83	10.33	10.84	11.38	11.95	12.55	13.18	13.84	14.53	15.26	16.02	16.82	17.66	18.54	19.47
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.53</b>	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.68	0.72	0.75	0.79	0.83	0.87	0.91	0.95	1.00	1.05
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.44</b>	<b>8.88</b>	<b>9.19</b>	<b>9.51</b>	<b>9.85</b>	<b>10.20</b>	<b>10.58</b>	<b>10.98</b>	<b>11.40</b>	<b>11.84</b>	<b>12.31</b>	<b>12.80</b>	<b>13.31</b>	<b>13.86</b>	<b>14.43</b>	<b>15.04</b>	<b>15.41</b>	<b>16.13</b>	<b>16.88</b>	<b>17.67</b>	<b>18.49</b>	<b>19.50</b>	<b>20.41</b>	<b>21.37</b>	<b>22.37</b>	<b>23.42</b>

Variable Cost (Rs/Unit)	<b>6.04</b>
Levillised Tariff (Fixed) (Rs/Unit)	2.98
<b>Levillised Tariff (Rs/Unit)</b>	<b>9.02</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	7.92
Electricity Generation (Levillised) (Rs./Unit)	5.91
<b>Levillised benefit (Rs./Unit)</b>	<b>0.13</b>

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Annexure 2.5 A						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
2	Project Cost	Capital Cost/MW	Useful Life	Years	25	
			Power Plant Cost	Rs Lakh/MW	559	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amout	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Discount Rate ( equiv. to WACC)	%	8.35%	
			Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M exepenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
6	Fuel Related Assumptions	<u>Heat Rate</u>	Interest On Working Capital	%	10.62%	
			After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3666.92	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766.00	



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Annexure 2.5 B								
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana								
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters			
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1			
			Auxiliary Consumption	%	12.00%			
			PLF	%	80.00%			
			Useful Life	Years	25			
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559			
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%			
			Equity	%	30%			
			Total Debt Amount	Rs Lakh	391.30			
			Total Equity Amout	Rs Lakh	167.70			
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30		
			Moratorium Period	years	0			
			Repayment Period( incld Moratorium)	years	15			
			Interest Rate	%	9.12%			
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70		
			Return on Equity (upto 20 years)	% p.a	16.96%			
			Return on Equity (After 20 years)		21.52%			
			Discount Rate ( equiv. to WACC)	%	8.35%			
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
MAT Rate	%	17.47%						
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%		
Depreciation Rate 16th year onwards	%	2.00%						
<u>For Fixed Charges</u>								
O&M Charges	Months	1						
5	Working Capital		Maintenance Spare	(% of O&M exepenses)	15.00%			
			Receivables for Debtors	Months	1.5			
			<u>For Variable Charges</u>					
			Biomass Stock	Months	4			
			Interest On Working Capital	%	10.62%			
			6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125
						During stabilization period	Kcal/kWh	4125
Base Price	Rs/T	4174.07						
GCV-Biomass	Kcal/kg	3100.00						
Biomass Price Escalation Factor		5.00%						
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05			
			O & M Expenses Escalation	%	3.84%			
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766			



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Annexure 2.5 C						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amout	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
			<u>For Fixed Charges</u>			
			O&M Charges	Months	1	
Maintenance Spare	(% of O&M exepenses)		15.00%			
Receivables for Debtors	Months	1.5				
<u>For Variable Charges</u>						
Biomass Stock	Months	4				
Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	4268.88	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.5 D</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amount	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
			Interest On Working Capital	%	10.62%		
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	4365.90		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		





CERC RE Tariff Order for FY 2022-23

Annexure 2.5 E							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	391.30		
			Total Equity Amount	Rs Lakh	167.70		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
		4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
	Depreciation Rate 16th year onwards			%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3643.76		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		340.02	357.02	374.87	393.62	413.30	433.96	455.66	478.44	502.36	527.48	553.86	581.55	610.63	641.16	673.22	706.88	742.22	779.33	818.30	859.21	902.17	947.28	994.65	1,044.38	1,096.60

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
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		19.90	20.78	21.70	22.67	23.70	24.77	25.90	27.08	28.32	29.63	31.00	32.45	33.96	35.55	37.22	38.79	40.66	42.63	44.69	46.85	49.23	51.61	54.11	56.73	59.48
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>158.97</b>	<b>159.39</b>	<b>159.94</b>	<b>160.60</b>	<b>161.40</b>	<b>162.33</b>	<b>163.40</b>	<b>164.61</b>	<b>165.98</b>	<b>167.51</b>	<b>169.20</b>	<b>171.07</b>	<b>173.11</b>	<b>175.34</b>	<b>177.77</b>	<b>186.50</b>	<b>171.76</b>	<b>177.24</b>	<b>182.95</b>	<b>188.90</b>	<b>202.84</b>	<b>209.31</b>	<b>216.05</b>	<b>223.08</b>	<b>230.40</b>

### Levellised tariff corresponding to Useful life

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	
Per unit Variable Cost	Rs/kWh		8.44	5.39	5.66	5.94	6.24	6.55	6.88	7.22	7.58	7.96	8.36	8.78	9.21	9.67	10.16	10.67	11.20	11.76	12.35	12.97	13.61	14.29	15.01	15.76	16.55	17.37
O&M expn	Rs/kWh		1.11	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh		0.37	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	0.41	0.41	0.41	0.41	0.41	
Int. on term loan	Rs/kWh		0.27	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh		0.47	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	0.56	0.59	0.61	0.64	0.68	0.71	0.74	0.78	0.82	0.86	0.90	0.94
RoE	Rs/kWh		0.46	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	0.45	0.45	0.45	0.45	
<b>Total COG</b>	<b>Rs/kWh</b>		<b>11.13</b>	<b>7.91</b>	<b>8.18</b>	<b>8.47</b>	<b>8.78</b>	<b>9.11</b>	<b>9.45</b>	<b>9.81</b>	<b>10.19</b>	<b>10.59</b>	<b>11.01</b>	<b>11.46</b>	<b>11.92</b>	<b>12.42</b>	<b>12.94</b>	<b>13.48</b>	<b>13.84</b>	<b>14.48</b>	<b>15.16</b>	<b>15.86</b>	<b>16.61</b>	<b>17.51</b>	<b>18.33</b>	<b>19.18</b>	<b>20.08</b>	<b>21.02</b>

Variable Cost (Rs/Unit)	<b>5.39</b>
Levellised Tariff (Fixed) (Rs/Unit)	2.69
<b>Levellised Tariff(Rs/Unit)</b>	<b>8.07</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	559.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	-48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-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
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levellised (Rs./Unit)	6.79
Electricity Generation (Levellised) (Rs./Unit)	6.04
<b>Levellised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.5 F								
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu								
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters			
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1			
			Auxiliary Consumption	%	12.00%			
			PLF	%	80.00%			
			Useful Life	Years	25			
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559			
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%			
			Equity	%	30%			
			Total Debt Amount	Rs Lakh	391.30			
			Total Equity Amount	Rs Lakh	167.70			
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30		
			Moratorium Period	years	0			
			Repayment Period( incld Moratorium)	years	15			
			Interest Rate	%	9.12%			
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70		
			Return on Equity (upto 20 years)	% p.a	16.96%			
			Return on Equity (After 20 years)		21.52%			
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
MAT Rate	%	17.47%						
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%		
Depreciation Rate 16th year onwards	%	2.00%						
<u>For Fixed Charges</u>								
O&M Charges	Months	1						
5	Working Capital		Maintenance Spare	(% of O&M expenses)	15.00%			
			Receivables for Debtors	Months	1.5			
			<u>For Variable Charges</u>					
			Biomass Stock	Months	4			
			Interest On Working Capital	%	10.62%			
			6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125
						During stabilization period	Kcal/kWh	4125
						Base Price	Rs/T	3607.38
GCV-Biomass	Kcal/kg	3100.00						
Biomass Price Escalation Factor		5.00%						
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05			
			O & M Expenses Escalation	%	3.84%			
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766			



CERC RE Tariff Order for FY 2022-23

Annexure 2.5 G						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amount	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
	Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3666.92	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



CERC RE Tariff Order for FY 2022-23

Annexure 2.5 H						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amount	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (After 20 years)		21.52%				
Discount Rate ( equiv. to WACC)	%	8.35%				
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
	Interest On Working Capital		%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3730.86	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



## CERC RE Tariff Order for FY 2022-23

**Determination of Tariff Component for Biomass based Rankine cycle Project**

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	MJ		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		348.15	365.55	383.83	403.02	423.17	444.33	466.55	489.88	514.37	540.09	567.09	595.45	625.22	656.48	689.31	723.77	759.96	797.96	837.86	879.75	923.74	969.92	1,018.42	1,069.34	1,122.81

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	11.18	11.18	11.18	11.18	11.18	11.18	11.18	11.18	11.18	11.18
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		20.30	21.20	22.14	23.14	24.18	25.28	26.43	27.64	28.92	30.25	31.66	33.13	34.68	36.31	38.01	39.62	41.54	43.55	45.66	47.87	50.29	52.73	55.28	57.96	60.78
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>159.37</b>	<b>159.82</b>	<b>160.38</b>	<b>161.07</b>	<b>161.89</b>	<b>162.84</b>	<b>163.94</b>	<b>165.18</b>	<b>166.57</b>	<b>168.13</b>	<b>169.85</b>	<b>171.75</b>	<b>173.83</b>	<b>176.10</b>	<b>178.57</b>	<b>181.34</b>	<b>184.31</b>	<b>187.48</b>	<b>190.86</b>	<b>194.45</b>	<b>198.26</b>	<b>202.29</b>	<b>206.54</b>	<b>210.99</b>	<b>215.64</b>

**Levelised tariff corresponding to Useful life**

Per Unit Cost of Generation	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	
Per unit Variable Cost	Rs/kWh	<b>8.64</b>	5.52	5.79	6.08	6.39	6.70	7.04	7.39	7.76	8.15	8.56	8.99	9.43	9.91	10.40	10.92	11.47	12.04	12.64	13.28	13.94	14.64	15.37	16.14	16.94	17.79
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.37</b>	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	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
Int. on term loan	Rs/kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.48</b>	0.32	0.34	0.35	0.37	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	0.72	0.76	0.80	0.84	0.88	0.92	0.96
RoE	Rs/kWh	<b>0.46</b>	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	0.57	0.57	0.57	0.57	0.57
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.34</b>	<b>8.04</b>	<b>8.32</b>	<b>8.62</b>	<b>8.94</b>	<b>9.27</b>	<b>9.62</b>	<b>9.99</b>	<b>10.38</b>	<b>10.79</b>	<b>11.22</b>	<b>11.68</b>	<b>12.16</b>	<b>12.66</b>	<b>13.19</b>	<b>13.75</b>	<b>14.12</b>	<b>14.78</b>	<b>15.47</b>	<b>16.19</b>	<b>16.95</b>	<b>17.87</b>	<b>18.70</b>	<b>19.58</b>	<b>20.50</b>	<b>21.46</b>

Variable Cost (Rs/Unit)	<b>5.52</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.70
<b>Levelised Tariff(Rs/Unit)</b>	<b>8.21</b>

**Determination of Additional Depreciation for Biomass Projects**

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	559.00

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%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%	5.28%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52

Accelerated Depreciation	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	
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	167.70	195.65	78.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	-48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	6.79
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.5 I						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	559	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	391.30	
			Total Equity Amount	Rs Lakh	167.70	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	391.30
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	167.70
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
			<u>For Fixed Charges</u>			
			O&M Charges	Months	1	
Maintenance Spare	(% of O&M expenses)		15.00%			
Receivables for Debtors	Months	1.5				
<u>For Variable Charges</u>						
Biomass Stock	Months	4				
Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3921.59	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

# CERC RE Tariff Order for FY 2022-23

**Determination of Tariff Component for Biomass based Rankine cycle Project**

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		365.95	384.24	403.45	423.63	444.81	467.05	490.40	514.92	540.67	567.70	596.09	625.89	657.19	690.04	724.55	760.77	798.81	838.75	880.69	924.73	970.96	1,019.51	1,070.49	1,124.01	1,180.21

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&MExpenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09	26.09
Interest on term loan	Rs Lakh		34.49	32.11	29.73	27.35	24.97	22.59	20.22	17.84	15.46	13.08	10.70	8.32	5.95	3.57	1.19	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		21.17	22.12	23.11	24.15	25.25	26.40	27.61	28.88	30.21	31.62	33.09	34.63	36.26	37.96	39.75	41.45	43.45	45.56	47.77	50.09	52.62	55.17	57.85	60.66	63.61
Return on Equity	Rs Lakh		28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	28.45	36.09	36.09	36.09	36.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>160.25</b>	<b>160.74</b>	<b>161.35</b>	<b>162.08</b>	<b>162.95</b>	<b>163.96</b>	<b>165.11</b>	<b>166.41</b>	<b>167.87</b>	<b>169.49</b>	<b>171.28</b>	<b>173.25</b>	<b>175.41</b>	<b>177.76</b>	<b>180.30</b>	<b>183.16</b>	<b>186.25</b>	<b>189.57</b>	<b>193.13</b>	<b>196.94</b>	<b>201.03</b>	<b>205.41</b>	<b>210.08</b>	<b>215.06</b>	<b>220.35</b>

**Levelised tariff corresponding to Useful life**

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
Per unit Variable Cost	Rs/kWh	<b>9.08</b>	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.57	8.99	9.44	9.92	10.41	10.93	11.48	12.05	12.66	13.29	13.95	14.65	15.38	16.15	16.96	17.81	18.70
O&MExpn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.37</b>	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	0.41	0.41	0.41	0.41	0.41	0.41
Int. on term loan	Rs/kWh	<b>0.27</b>	0.55	0.51	0.47	0.43	0.40	0.36	0.32	0.28	0.24	0.21	0.17	0.13	0.09	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.51</b>	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.87	0.92	0.96	1.01
RoE	Rs/kWh	<b>0.46</b>	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	0.45	0.45	0.45	0.45	0.45
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.80</b>	<b>8.34</b>	<b>8.63</b>	<b>8.95</b>	<b>9.28</b>	<b>9.63</b>	<b>10.00</b>	<b>10.39</b>	<b>10.80</b>	<b>11.23</b>	<b>11.68</b>	<b>12.16</b>	<b>12.66</b>	<b>13.19</b>	<b>13.75</b>	<b>14.34</b>	<b>14.93</b>	<b>15.42</b>	<b>16.14</b>	<b>16.90</b>	<b>17.70</b>	<b>18.65</b>	<b>19.53</b>	<b>20.44</b>	<b>21.41</b>	<b>22.42</b>

Variable Cost (Rs/Unit)	<b>5.80</b>
Levelised Tariff (Fixed) (Rs/Unit)	2.72
<b>Levelised Tariff (Rs/Unit)</b>	<b>8.52</b>

**Determination of Additional Depreciation for Biomass Projects**

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	559.00

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%	0.00%
Book Depreciation	Rs Lakh	14.76	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	29.52	16.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	167.70	195.65	79.26	46.96	28.17	16.90	10.14	6.09	3.65	2.19	1.31	0.79	0.47	0.28	0.17	0.10	0.06	0.04	0.02	0.01	0.01	0.00	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	152.94	166.13	48.74	17.44	-1.34	-12.61	-19.37	-23.43	-25.86	-27.32	-28.20	-28.73	-29.04	-29.23	-29.34	-29.41	-29.45	-16.06	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	53.44	58.05	17.03	6.09	-0.47	-4.41	-6.77	-8.19	-9.04	-9.55	-9.85	-10.04	-10.15	-10.21	-10.25	-10.28	-10.29	-5.61	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.69	0.92	0.27	0.10	-0.01	-0.07	-0.11	-0.13	-0.14	-0.15	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.16	-0.09	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	6.79
Electricity Generation (Levelised) (Rs./Unit)	6.04
<b>Levelised benefit (Rs./Unit)</b>	<b>0.11</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.6 A						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420	
			Total Equity Amount	Rs Lakh	180	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	180
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
	Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3666.92	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



CERC RE Tariff Order for FY 2022-23

Annexure 2.6 B							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
			Depreciation Rate 16th year onwards	%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	4174.07		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		389.50	408.98	429.43	450.90	473.45	497.12	521.97	548.07	575.48	604.25	634.46	666.19	699.49	734.47	771.19	809.75	850.24	892.75	937.39	984.26	1,033.47	1,085.15	1,139.40	1,196.37	1,256.19

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		22.42	23.42	24.48	25.58	26.74	27.96	29.24	30.59	32.00	33.48	35.04	36.68	38.40	40.21	42.11	43.90	46.03	48.26	50.60	53.06	55.75	58.46	61.29	64.27	67.40
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	38.74	38.74	38.74	38.74	38.74
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>168.03</b>	<b>168.40</b>	<b>168.89</b>	<b>169.52</b>	<b>170.28</b>	<b>171.18</b>	<b>172.23</b>	<b>173.43</b>	<b>174.79</b>	<b>176.32</b>	<b>178.03</b>	<b>179.91</b>	<b>181.99</b>	<b>184.27</b>	<b>186.75</b>	<b>174.52</b>	<b>180.03</b>	<b>185.78</b>	<b>191.77</b>	<b>198.01</b>	<b>212.83</b>	<b>219.62</b>	<b>226.70</b>	<b>234.09</b>	<b>241.78</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.89</b>	6.31	6.63	6.96	7.31	7.67	8.06	8.46	8.88	9.33	9.79	10.28	10.79	11.33	11.90	12.50	13.12	13.78	14.47	15.19	15.95	16.75	17.58	18.46	19.39	20.36
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh	<b>0.55</b>	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.50	0.52	0.54	0.57	0.59	0.62	0.65	0.68	0.71	0.75	0.78	0.82	0.86	0.90	0.95	0.99	1.04	1.09
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.63
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.78</b>	<b>9.03</b>	<b>9.36</b>	<b>9.70</b>	<b>10.05</b>	<b>10.43</b>	<b>10.83</b>	<b>11.25</b>	<b>11.69</b>	<b>12.16</b>	<b>12.65</b>	<b>13.17</b>	<b>13.71</b>	<b>14.28</b>	<b>14.89</b>	<b>15.52</b>	<b>15.95</b>	<b>16.69</b>	<b>17.48</b>	<b>18.30</b>	<b>19.16</b>	<b>20.20</b>	<b>21.14</b>	<b>22.14</b>	<b>23.18</b>	<b>24.27</b>

Variable Cost (Rs/Unit)	<b>6.31</b>
Levelised Tariff (Fixed) (Rs/Unit)	<b>2.89</b>
<b>Levelised Tariff (Rs/Unit)</b>	<b>9.20</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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%	2.88%	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

Accelerated Depreciation		100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00	

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	<b>7.28</b>
Electricity Generation (Levelised) (Rs./Unit)	<b>5.91</b>
<b>Levelised benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.6 C							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
	Interest On Working Capital		%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	4268.88		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		





CERC RE Tariff Order for FY 2022-23

Annexure 2.6 D							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	4365.90		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		



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Annexure 2.6 E							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%		
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
		<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%		
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3643.76		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		



CERC RE Tariff Order for FY 2022-23

Annexure 2.6 F							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
			Interest On Working Capital	%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3607.38		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		



CERC RE Tariff Order for FY 2022-23

Annexure 2.6 G							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
			Total Equity Amount	Rs Lakh	180		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	420	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3666.92		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		



**CERC RE Tariff Order for FY 2022-23**

**Determination of Tariff Component for Biomass based Rankine cycle Project**

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	MJ		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		342.18	359.29	377.25	396.12	415.92	436.72	458.55	481.48	505.56	530.83	557.38	585.24	614.51	645.23	677.49	711.37	746.94	784.28	823.50	864.67	907.91	953.30	1,000.97	1,051.01	1,103.56

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.09	20.97	21.90	22.88	23.90	24.98	26.11	27.30	28.55	29.86	31.24	32.69	34.21	35.81	37.49	39.05	40.93	42.91	44.99	47.16	49.56	51.95	54.47	57.11	59.87
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	38.74	38.74	38.74	38.74
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>165.69</b>	<b>165.95</b>	<b>166.32</b>	<b>166.81</b>	<b>167.44</b>	<b>168.20</b>	<b>169.10</b>	<b>170.14</b>	<b>171.34</b>	<b>172.70</b>	<b>174.22</b>	<b>175.92</b>	<b>177.80</b>	<b>179.86</b>	<b>182.13</b>	<b>184.67</b>	<b>187.44</b>	<b>190.43</b>	<b>193.65</b>	<b>197.11</b>	<b>200.84</b>	<b>204.84</b>	<b>209.11</b>	<b>213.67</b>	<b>218.53</b>

**Levilled tariff corresponding to Useful life**

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
Per unit Variable Cost	Rs/kWh	<b>8.69</b>	5.54	5.82	6.11	6.42	6.74	7.08	7.43	7.80	8.19	8.60	9.03	9.48	9.96	10.46	10.98	11.53	12.10	12.71	13.34	14.01	14.71	15.45	16.22	17.03	17.88
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	0.33	0.34	0.35	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.51	0.53	0.55	0.58	0.61	0.63	0.66	0.70	0.73	0.76	0.80	0.84	0.88	0.93	0.97
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.52</b>	<b>8.23</b>	<b>8.51</b>	<b>8.81</b>	<b>9.12</b>	<b>9.45</b>	<b>9.80</b>	<b>10.17</b>	<b>10.56</b>	<b>10.97</b>	<b>11.40</b>	<b>11.85</b>	<b>12.33</b>	<b>12.84</b>	<b>13.37</b>	<b>13.93</b>	<b>14.28</b>	<b>14.94</b>	<b>15.63</b>	<b>16.36</b>	<b>17.12</b>	<b>18.06</b>	<b>18.90</b>	<b>19.78</b>	<b>20.71</b>	<b>21.68</b>

Variable Cost (Rs/Unit)	<b>5.54</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.83
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.38</b>

**Determination of Additional Depreciation for Biomass Projects**

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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	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	31.68	17.28	0.00	0.00	0.00	0.00	0.00	0.00

**Accelerated Depreciation**

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.28
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.6 H							
Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh							
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters		
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600		
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	420		
					Total Equity Amount	Rs Lakh	180
				<u>Debt Component</u>	Loan Amount	Rs Lakh	420
					Moratorium Period	years	0
					Repayment Period( incld Moratorium)	years	15
					Interest Rate	%	9.12%
				<u>Equity Component</u>	Equity amount	Rs Lakh	180
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
		4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
MAT Rate	%				17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
			Interest On Working Capital	%	10.62%		
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3730.86		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766		

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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	MJ		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

  

Variable 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
Biomass Cost	Rs. Lakh		348.15	365.55	383.83	403.02	423.17	444.33	466.55	489.88	514.37	540.09	567.09	595.45	625.22	656.48	689.31	723.77	759.96	797.96	837.86	879.75	923.74	969.92	1,018.42	1,069.34	1,122.81

  

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		20.38	21.28	22.23	23.22	24.26	25.36	26.51	27.72	28.99	30.32	31.72	33.19	34.74	36.36	38.07	39.66	41.58	43.59	45.69	47.91	50.34	52.77	55.33	58.01	60.82
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	38.74	38.74	38.74	38.74
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>165.99</b>	<b>166.26</b>	<b>166.64</b>	<b>167.15</b>	<b>167.80</b>	<b>168.57</b>	<b>169.49</b>	<b>170.56</b>	<b>171.78</b>	<b>173.16</b>	<b>174.70</b>	<b>176.42</b>	<b>178.33</b>	<b>180.42</b>	<b>182.71</b>	<b>185.28</b>	<b>188.11</b>	<b>191.19</b>	<b>194.54</b>	<b>198.16</b>	<b>202.04</b>	<b>213.94</b>	<b>220.74</b>	<b>227.82</b>	<b>235.21</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.84</b>	5.64	5.92	6.22	6.53	6.86	7.20	7.56	7.94	8.33	8.75	9.19	9.65	10.13	10.64	11.17	11.73	12.31	12.93	13.58	14.26	14.97	15.72	16.50	17.33	18.19
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.45	0.45	0.45	0.45	0.45
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.33	0.34	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.51	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.94	0.99
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.68</b>	<b>8.33</b>	<b>8.62</b>	<b>8.92</b>	<b>9.24</b>	<b>9.58</b>	<b>9.93</b>	<b>10.31</b>	<b>10.70</b>	<b>11.12</b>	<b>11.56</b>	<b>12.02</b>	<b>12.51</b>	<b>13.02</b>	<b>13.56</b>	<b>14.13</b>	<b>14.49</b>	<b>15.16</b>	<b>15.86</b>	<b>16.60</b>	<b>17.38</b>	<b>18.33</b>	<b>19.18</b>	<b>20.08</b>	<b>21.02</b>	<b>22.01</b>

Variable Cost (Rs/Unit)	<b>5.64</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.84
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.48</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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%	2.88%	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

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MJ	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.28
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.6 I						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	600	
3	Financial Assumptions	Debt: Equity	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	420	
			Total Equity Amount	Rs Lakh	180	
			Debt Component	Loan Amount	Rs Lakh	420
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			Equity Component	Equity amount	Rs Lakh	180
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
	Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			For Variable Charges			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3921.59	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
<b>Variable Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>																									
Biomass Cost	Rs. Lakh		365.95	384.24	403.45	423.63	444.81	467.05	490.40	514.92	540.67	567.70	596.09	625.89	657.19	690.04	724.55	760.77	798.81	838.75	880.69	924.73	970.96	1,019.51	1,070.49	1,124.01	1,180.21
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>																									
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00	28.00
Interest on term loan	Rs Lakh		37.02	34.46	31.91	29.36	26.80	24.25	21.70	19.15	16.59	14.04	11.49	8.93	6.38	3.83	1.28	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		21.26	22.20	23.19	24.23	25.33	26.48	27.68	28.95	30.28	31.68	33.15	34.70	36.32	38.02	39.81	41.49	43.49	45.60	47.81	50.12	52.67	55.22	57.90	60.71	63.65
Return on Equity	Rs Lakh		30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	30.54	38.74	38.74	38.74	38.74
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>166.87</b>	<b>167.18</b>	<b>167.61</b>	<b>168.17</b>	<b>168.86</b>	<b>169.69</b>	<b>170.67</b>	<b>171.79</b>	<b>173.07</b>	<b>174.52</b>	<b>176.13</b>	<b>177.93</b>	<b>179.90</b>	<b>182.07</b>	<b>184.45</b>	<b>172.11</b>	<b>177.50</b>	<b>183.11</b>	<b>188.97</b>	<b>195.07</b>	<b>209.75</b>	<b>216.39</b>	<b>223.30</b>	<b>230.52</b>	<b>238.04</b>

### Levelling tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>9.29</b>	5.93	6.23	6.54	6.86	7.21	7.57	7.95	8.34	8.76	9.20	9.66	10.14	10.65	11.18	11.74	12.33	12.94	13.59	14.27	14.98	15.73	16.52	17.35	18.21	19.12
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.52	0.48	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.52</b>	0.34	0.36	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	0.67	0.70	0.74	0.77	0.81	0.85	0.89	0.94	0.98	1.03
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.63	0.63	0.63	0.63	0.63
<b>Total COG</b>	<b>Rs/kWh</b>	<b>12.15</b>	<b>8.63</b>	<b>8.94</b>	<b>9.25</b>	<b>9.59</b>	<b>9.94</b>	<b>10.32</b>	<b>10.71</b>	<b>11.13</b>	<b>11.57</b>	<b>12.03</b>	<b>12.51</b>	<b>13.03</b>	<b>13.56</b>	<b>14.13</b>	<b>14.73</b>	<b>15.12</b>	<b>15.82</b>	<b>16.56</b>	<b>17.33</b>	<b>18.15</b>	<b>19.13</b>	<b>20.03</b>	<b>20.96</b>	<b>21.95</b>	<b>22.98</b>

Variable Cost (Rs/Unit)	<b>5.93</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.86
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.79</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	600.00

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%	2.88%	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

### Accelerated Depreciation

	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Opening	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Allowed during the year	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Closing	%	180.00	210.00	84.00	50.40	30.24	18.14	10.89	6.53	3.92	2.35	1.41	0.85	0.51	0.30	0.18	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	164.16	178.32	52.32	18.72	-1.44	-13.54	-20.79	-25.15	-27.76	-29.33	-30.27	-30.83	-31.17	-31.38	-31.50	-31.57	-31.61	-17.24	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	57.36	62.31	18.28	6.54	-0.50	-4.73	-7.27	-8.79	-9.70	-10.25	-10.58	-10.77	-10.89	-10.96	-11.01	-11.03	-11.05	-6.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	1.86	1.01	0.30	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	0.15

Tax Benefit Levilled (Rs./Unit)	7.28
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.7 A						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax
MAT Rate	%	17.47%				
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%
Depreciation Rate 16th year onwards	%	2.00%				
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3666.92	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		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	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	21	22	23	24	25
Biomass Cost	Rs. Lakh		342.18	359.29	377.25	396.12	415.92	436.72	458.55	481.48	505.56	530.83	557.38	585.24	614.51	645.23	677.49	711.37	746.94	784.28	823.50	864.67	907.91	953.30	1,000.97	1,051.01	1,103.56

  

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	28.51	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22	12.22
Interest on term loan	Rs Lakh		37.69	35.09	32.49	29.90	27.30	24.70	22.10	19.50	16.90	14.30	11.70	9.10	6.50	3.90	1.30	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		20.11	21.00	21.92	22.90	23.92	25.00	26.13	27.32	28.57	29.88	31.26	32.71	34.23	35.82	37.50	39.06	40.95	42.92	45.00	47.17	49.57	51.97	54.48	57.12	59.89
Return on Equity	Rs Lakh		31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>167.47</b>	<b>167.67</b>	<b>168.00</b>	<b>168.45</b>	<b>169.02</b>	<b>169.74</b>	<b>170.59</b>	<b>171.59</b>	<b>172.74</b>	<b>174.05</b>	<b>175.53</b>	<b>177.18</b>	<b>179.01</b>	<b>181.02</b>	<b>183.24</b>	<b>185.64</b>	<b>188.22</b>	<b>190.99</b>	<b>193.96</b>	<b>197.15</b>	<b>200.58</b>	<b>204.27</b>	<b>208.22</b>	<b>212.45</b>	<b>216.98</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.49</b>	5.42	5.69	5.98	6.28	6.59	6.92	7.27	7.63	8.01	8.41	8.83	9.27	9.74	10.22	10.73	11.27	11.83	12.43	13.05	13.70	14.38	15.10	15.86	16.65	17.48
O&M expn	Rs/kWh	<b>1.11</b>	0.79	0.82	0.86	0.89	0.92	0.96	0.99	1.03	1.07	1.11	1.16	1.20	1.25	1.29	1.34	1.40	1.45	1.50	1.56	1.62	1.68	1.75	1.82	1.89	1.96
Depreciation	Rs/kWh	<b>0.40</b>	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	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
Int. on term loan	Rs/kWh	<b>0.30</b>	0.60	0.56	0.51	0.47	0.43	0.39	0.35	0.31	0.27	0.23	0.19	0.14	0.10	0.06	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.48</b>	0.32	0.33	0.35	0.36	0.38	0.40	0.41	0.43	0.45	0.47	0.50	0.52	0.54	0.57	0.59	0.62	0.65	0.68	0.71	0.75	0.79	0.82	0.86	0.90	0.95
RoE	Rs/kWh	<b>0.50</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.29</b>	<b>8.07</b>	<b>8.35</b>	<b>8.64</b>	<b>8.94</b>	<b>9.27</b>	<b>9.61</b>	<b>9.97</b>	<b>10.35</b>	<b>10.75</b>	<b>11.17</b>	<b>11.61</b>	<b>12.08</b>	<b>12.57</b>	<b>13.09</b>	<b>13.64</b>	<b>13.97</b>	<b>14.62</b>	<b>15.30</b>	<b>16.01</b>	<b>16.76</b>	<b>17.67</b>	<b>18.50</b>	<b>19.36</b>	<b>20.26</b>	<b>21.21</b>

Variable Cost (Rs/Unit)	<b>5.42</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.79
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.21</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	611.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	16.13	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	32.26	17.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

#### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	183.30	213.85	85.54	51.32	30.79	18.48	11.09	6.65	3.99	2.39	1.44	0.86	0.52	0.31	0.19	0.11	0.07	0.04	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	167.17	181.59	53.28	19.06	-1.47	-13.78	-21.17	-25.61	-28.27	-29.87	-30.82	-31.40	-31.74	-31.95	-32.07	-32.15	-32.19	-17.56	0.02	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	58.42	63.45	18.62	6.66	-0.51	-4.82	-7.40	-9.95	-9.88	-10.44	-10.77	-10.97	-11.09	-11.16	-11.21	-11.23	-11.25	-6.13	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.16	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	6.31	6.31	6.31	6.31	6.31
Per unit benefit	Rs/Unit	1.85	1.01	0.29	0.11	-0.01	-0.08	-0.12	-0.14	-0.16	-0.17	-0.17	-0.17	-0.18	-0.18	-0.18	-0.18	-0.18	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levilled (Rs./Unit)	7.42
Electricity Generation (Levilled) (Rs./Unit)	6.04
<b>Levilled benefit (Rs./Unit)</b>	<b>0.12</b>

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Annexure 2.7 B						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
3	Financial Assumptions	Debt: Equity	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			Debt Component	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			Equity Component	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
	Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			For Variable Charges			
			Biomass Stock	Months	4	
	Interest On Working Capital	%	10.62%			
6	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	4174.07	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	





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Annexure 2.7 C						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax
MAT Rate	%	17.47%				
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%
Depreciation Rate 16th year onwards	%	2.00%				
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	4268.88	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



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<b>Annexure 2.7 D</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
2	<b>Project Cost</b>	Capital Cost/MW	Useful Life	Years	25	
			Power Plant Cost	Rs Lakh/MW	611	
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
			<u>For Fixed Charges</u>			
5	<b>Working Capital</b>		O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
			6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period
During stabilization period	Kcal/kWh	4125				
Base Price	Rs/T	4365.90				
GCV-Biomass	Kcal/kg	3100.00				
Biomass Price Escalation Factor		5.00%				
<u>O&amp;M Expenses</u>						
7	<b>Operation &amp; Maintenance</b>		O & M Expenses Escalation	%	3.84%	
			Total No .Of Hours	Hrs	8766	
8	<b>Generation &amp; Sale of Energy</b>					



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<b>Annexure 2.7 E</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	<b>Working Capital</b>	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3643.76	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766	



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<b>Annexure 2.7 F</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
		<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
		<u>Equity Component</u>	Equity amount	Rs Lakh	183.30	
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%
	MAT Rate			%	17.47%	
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%	
	Depreciation Rate 16th year onwards			%	2.00%	
<b>5</b>	<b>Working Capital</b>			<u>For Fixed Charges</u>		
	O&M Charges				Months	1
	Maintenance Spare	(% of O&M expenses)		15.00%		
	Receivables for Debtors		Months	1.5		
	<u>For Variable Charges</u>					
	Biomass Stock		Months	4		
	Interest On Working Capital		%	10.62%		
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3607.38	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05	
		O & M Expenses Escalation		%	3.84%	
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766	





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<b>Annexure 2.7 G</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611		
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	427.70		
			Total Equity Amount	Rs Lakh	183.30		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
		Discount Rate ( equiv. to WACC)	%	8.35%			
4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
		Interest On Working Capital	%	10.62%			
6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3666.92		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		



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<b>Annexure 2.7 H</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	10.00%		
			PLF	%	80.00%		
<b>2</b>	<b>Project Cost</b>		Useful Life	Years	25		
		Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	427.70		
			Total Equity Amount	Rs Lakh	183.30		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%		
	Depreciation Rate 16th year onwards			%	2.00%		
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
<b>6</b>	<b>Fuel Related Assumptions</b>		Interest On Working Capital	%	10.62%		
		<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3730.86		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		



CERC RE Tariff Order for FY 2022-23

Annexure 2.7 I						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	10.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	611	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	427.70	
			Total Equity Amount	Rs Lakh	183.30	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	427.70
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	183.30
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3921.59	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



CERC RE Tariff Order for FY 2022-23

Annexure 2.8 A								
Assumptions for Biomass Based Rankine Cycle Project Parameters: Andhra Pradesh								
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters			
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1			
			Auxiliary Consumption	%	12.00%			
			PLF	%	80.00%			
			Useful Life	Years	25			
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652			
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%			
			Equity	%	30%			
			Total Debt Amount	Rs Lakh	456.40			
			Total Equity Amount	Rs Lakh	195.60			
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40		
			Moratorium Period	years	0			
			Repayment Period( incld Moratorium)	years	15			
			Interest Rate	%	9.12%			
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60		
			Return on Equity (upto 20 years)	% p.a	16.96%			
			Return on Equity (After 20 years)		21.52%			
			Discount Rate ( equiv. to WACC)	%	8.35%			
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%			
			MAT Rate	%	17.47%			
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%		
			Depreciation Rate 16th year onwards	%	2.00%			
			5	Working Capital	<u>For Fixed Charges</u>	O&M Charges	Months	1
						Maintenance Spare	(% of O&M expenses)	15.00%
Receivables for Debtors	Months	1.5						
<u>For Variable Charges</u>								
		Biomass Stock	Months	4				
		Interest On Working Capital	%	10.62%				
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125			
			During stabilization period	Kcal/kWh	4125			
			Base Price	Rs/T	3666.92			
			GCV-Biomass	Kcal/kg	3100.00			
			Biomass Price Escalation Factor		5.00%			
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05			
			O & M Expenses Escalation	%	3.84%			
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766			





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Annexure 2.8 B					
Assumptions for Biomass Based Rankine Cycle Project Parameters: Haryana					
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	12.00%
			PLF	%	80.00%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	456.40
			Total Equity Amount	Rs Lakh	195.60
		<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15
			Interest Rate	%	9.12%
		<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (After 20 years)		21.52%
			Discount Rate ( equiv. to WACC)	%	8.35%
		4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax
	MAT Rate			%	17.47%
<u>Depreciation</u>	Depreciation Rate( Power Plant)			%	4.67%
	Depreciation Rate 16th year onwards			%	2.00%
5	Working Capital	<u>For Fixed Charges</u>			
		O&M Charges		Months	1
		Maintenance Spare	(% of O&M expenses)		15.00%
		Receivables for Debtors		Months	1.5
		<u>For Variable Charges</u>			
		Biomass Stock		Months	4
		Interest On Working Capital		%	10.62%
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125
			During stabilization period	Kcal/kWh	4125
			Base Price	Rs/T	4174.07
			GCV-Biomass	Kcal/kg	3100.00
			Biomass Price Escalation Factor		5.00%
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05
		O & M Expenses Escalation		%	3.84%
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766



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Annexure 2.8 C						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Maharashtra						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	4268.88	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.8 D</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Punjab</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
			Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652	
<b>2</b>	<b>Project Cost</b>						
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	456.40		
			Total Equity Amount	Rs Lakh	195.60		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
		<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%
	MAT Rate			%	17.47%		
	<u>Depreciation</u>			Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
			Biomass Stock	Months	4		
			Interest On Working Capital	%	10.62%		
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	4365.90		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
		O & M Expenses Escalation		%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		



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Annexure 2.8 E						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Rajasthan						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax
MAT Rate	%	17.47%				
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%
Depreciation Rate 16th year onwards	%	2.00%				
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3643.76	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

  

Variable 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
Biomass Cost	Rs. Lakh		340.02	357.02	374.87	393.62	413.30	433.96	455.66	478.44	502.36	527.48	553.86	581.55	610.63	641.16	673.22	706.88	742.22	779.33	818.30	859.21	902.17	947.28	994.65	1,044.38	1,096.60

  

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
O&M Expenses	Rs Lakh		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		20.09	20.97	21.89	22.86	23.87	24.94	26.06	27.24	28.48	29.78	31.15	32.59	34.10	35.68	37.35	38.88	40.75	42.72	44.78	46.94	49.33	51.72	54.22	56.84	59.59
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>173.98</b>	<b>174.00</b>	<b>174.15</b>	<b>174.41</b>	<b>174.80</b>	<b>175.33</b>	<b>176.00</b>	<b>176.82</b>	<b>177.78</b>	<b>178.91</b>	<b>180.20</b>	<b>181.67</b>	<b>183.31</b>	<b>185.14</b>	<b>187.17</b>	<b>173.19</b>	<b>178.44</b>	<b>183.92</b>	<b>189.63</b>	<b>195.58</b>	<b>210.81</b>	<b>217.28</b>	<b>224.02</b>	<b>231.05</b>	<b>238.37</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.63</b>	5.51	5.79	6.07	6.38	6.70	7.03	7.38	7.75	8.14	8.55	8.97	9.42	9.89	10.39	10.91	11.45	12.03	12.63	13.26	13.92	14.62	15.35	16.12	16.92	17.77
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	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	0.63	0.66	0.69	0.73	0.76	0.80	0.84	0.88	0.92	0.97
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.57</b>	<b>8.33</b>	<b>8.60</b>	<b>8.90</b>	<b>9.20</b>	<b>9.53</b>	<b>9.87</b>	<b>10.24</b>	<b>10.62</b>	<b>11.02</b>	<b>11.45</b>	<b>11.89</b>	<b>12.37</b>	<b>12.87</b>	<b>13.39</b>	<b>13.94</b>	<b>14.26</b>	<b>14.92</b>	<b>15.61</b>	<b>16.33</b>	<b>17.09</b>	<b>18.03</b>	<b>18.87</b>	<b>19.75</b>	<b>20.67</b>	<b>21.63</b>

Variable Cost (Rs/Unit)	<b>5.51</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.94
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.45</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

  

Accelerated Depreciation	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
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	

  

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.92
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.13</b>

CERC RE Tariff Order for FY 2022-23

Annexure 2.8 F						
Assumptions for Biomass Based Rankine Cycle Project Parameters: Tamil Nadu						
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters	
1	Power Generation	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652	
3	Financial Assumptions	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
			4	Financial Assumptions	<u>Fiscal Assumptions</u>	Income Tax
MAT Rate	%	17.47%				
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%
Depreciation Rate 16th year onwards	%	2.00%				
5	Working Capital	<u>For Fixed Charges</u>				
			O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)		15.00%
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
6	Fuel Related Assumptions	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125	
			During stabilization period	Kcal/kWh	4125	
			Base Price	Rs/T	3607.38	
			GCV-Biomass	Kcal/kg	3100.00	
			Biomass Price Escalation Factor		5.00%	
7	Operation & Maintenance	O&M Expenses		Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	Generation & Sale of Energy	Total No .Of Hours		Hrs	8766	

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Variable 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
Biomass Cost	Rs. Lakh		336.62	353.46	371.13	389.68	409.17	429.63	451.11	473.66	497.35	522.21	548.33	575.74	604.53	634.76	666.49	699.82	734.81	771.55	810.13	850.63	893.16	937.82	984.71	1,033.95	1,085.65
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		19.93	20.79	21.71	22.66	23.67	24.73	25.84	27.01	28.23	29.52	30.88	32.30	33.80	35.37	37.01	38.53	40.39	42.33	44.38	46.52	48.89	51.25	53.73	56.32	59.05
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>173.81</b>	<b>173.83</b>	<b>173.96</b>	<b>174.22</b>	<b>174.60</b>	<b>175.12</b>	<b>175.78</b>	<b>176.58</b>	<b>177.54</b>	<b>178.65</b>	<b>179.93</b>	<b>181.38</b>	<b>183.01</b>	<b>184.83</b>	<b>186.84</b>	<b>172.84</b>	<b>178.08</b>	<b>183.54</b>	<b>189.23</b>	<b>195.16</b>	<b>210.37</b>	<b>216.81</b>	<b>223.53</b>	<b>230.53</b>	<b>237.83</b>

### Levillised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.55</b>	5.45	5.73	6.01	6.31	6.63	6.96	7.31	7.68	8.06	8.46	8.89	9.33	9.80	10.29	10.80	11.34	11.91	12.50	13.13	13.78	14.47	15.20	15.96	16.75	17.59
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.48</b>	0.32	0.34	0.35	0.37	0.38	0.40	0.42	0.44	0.46	0.48	0.50	0.52	0.55	0.57	0.60	0.62	0.65	0.69	0.72	0.75	0.79	0.83	0.87	0.91	0.96
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.48</b>	<b>8.27</b>	<b>8.54</b>	<b>8.83</b>	<b>9.14</b>	<b>9.46</b>	<b>9.80</b>	<b>10.16</b>	<b>10.54</b>	<b>10.94</b>	<b>11.36</b>	<b>11.80</b>	<b>12.27</b>	<b>12.76</b>	<b>13.28</b>	<b>13.83</b>	<b>14.14</b>	<b>14.79</b>	<b>15.48</b>	<b>16.19</b>	<b>16.95</b>	<b>17.88</b>	<b>18.71</b>	<b>19.58</b>	<b>20.49</b>	<b>21.45</b>

Variable Cost (Rs/Unit)	<b>5.45</b>
Levillised Tariff (Fixed) (Rs/Unit)	2.93
<b>Levillised Tariff (Rs/Unit)</b>	<b>8.39</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised (Rs./Unit)	7.92
Electricity Generation (Levillised) (Rs./Unit)	5.91
<b>Levillised benefit (Rs./Unit)</b>	<b>0.13</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.8 G</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Telangana</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
<b>1</b>	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
<b>2</b>	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652		
<b>3</b>	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	456.40		
			Total Equity Amount	Rs Lakh	195.60		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
				Interest Rate	%	9.12%	
				<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
					Return on Equity (upto 20 years)	% p.a	16.96%
					Return on Equity (After 20 years)		21.52%
					Discount Rate ( equiv. to WACC)	%	8.35%
<b>4</b>	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
<b>5</b>	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors		Months	1.5	
			<u>For Variable Charges</u>				
			Biomass Stock		Months	4	
			Interest On Working Capital		%	10.62%	
<b>6</b>	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3666.92		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor			5.00%	
<b>7</b>	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
<b>8</b>	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		342.18	359.29	377.25	396.12	415.92	436.72	458.55	481.48	505.56	530.83	557.38	585.24	614.51	645.23	677.49	711.37	746.94	784.28	823.50	864.67	907.91	953.30	1,000.97	1,051.01	1,103.56

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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04	13.04
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		20.20	21.08	22.01	22.98	24.00	25.08	26.21	27.39	28.64	29.95	31.32	32.77	34.29	35.88	37.56	39.10	40.98	42.96	45.04	47.21	49.62	52.01	54.53	57.16	59.93
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>174.09</b>	<b>174.12</b>	<b>174.26</b>	<b>174.53</b>	<b>174.93</b>	<b>175.47</b>	<b>176.15</b>	<b>176.97</b>	<b>177.94</b>	<b>179.08</b>	<b>180.37</b>	<b>181.85</b>	<b>183.50</b>	<b>185.34</b>	<b>187.38</b>	<b>173.41</b>	<b>178.67</b>	<b>184.16</b>	<b>189.89</b>	<b>195.85</b>	<b>211.10</b>	<b>217.58</b>	<b>224.33</b>	<b>231.37</b>	<b>238.71</b>

### Levilled tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.69</b>	5.54	5.82	6.11	6.42	6.74	7.08	7.43	7.80	8.19	8.60	9.03	9.48	9.96	10.46	10.98	11.53	12.10	12.71	13.34	14.01	14.71	15.45	16.22	17.03	17.88
O&M Expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.49</b>	0.33	0.34	0.36	0.37	0.39	0.41	0.42	0.44	0.46	0.49	0.51	0.53	0.56	0.58	0.61	0.63	0.66	0.70	0.73	0.77	0.80	0.84	0.88	0.93	0.97
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.63</b>	<b>8.37</b>	<b>8.64</b>	<b>8.94</b>	<b>9.25</b>	<b>9.57</b>	<b>9.92</b>	<b>10.28</b>	<b>10.67</b>	<b>11.08</b>	<b>11.50</b>	<b>11.95</b>	<b>12.43</b>	<b>12.93</b>	<b>13.46</b>	<b>14.01</b>	<b>14.34</b>	<b>15.00</b>	<b>15.69</b>	<b>16.42</b>	<b>17.18</b>	<b>18.13</b>	<b>18.97</b>	<b>19.85</b>	<b>20.78</b>	<b>21.75</b>

Variable Cost (Rs/Unit)	<b>5.54</b>
Levilled Tariff (Fixed) (Rs/Unit)	2.94
<b>Levilled Tariff (Rs/Unit)</b>	<b>8.48</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depm.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levilled (Rs./Unit)	7.92
Electricity Generation (Levilled) (Rs./Unit)	5.91
<b>Levilled benefit (Rs./Unit)</b>	<b>0.13</b>

**CERC RE Tariff Order for FY 2022-23**

<b>Annexure 2.8 H</b>						
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Uttar Pradesh</b>						
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>	
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption	%	12.00%	
			PLF	%	80.00%	
			Useful Life	Years	25	
2	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652	
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	456.40	
			Total Equity Amount	Rs Lakh	195.60	
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40
			Moratorium Period	years	0	
			Repayment Period( incld Moratorium)	years	15	
			Interest Rate	%	9.12%	
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (After 20 years)		21.52%	
			Discount Rate ( equiv. to WACC)	%	8.35%	
			4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax
MAT Rate	%	17.47%				
<u>Depreciation</u>	Depreciation Rate( Power Plant)	%				4.67%
Depreciation Rate 16th year onwards	%	2.00%				
<u>For Fixed Charges</u>						
5	<b>Working Capital</b>		O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)	15.00%	
			Receivables for Debtors	Months	1.5	
			<u>For Variable Charges</u>			
			Biomass Stock	Months	4	
			Interest On Working Capital	%	10.62%	
			6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period
During stabilization period	Kcal/kWh	4125				
Base Price	Rs/T	3730.86				
GCV-Biomass	Kcal/kg	3100.00				
Biomass Price Escalation Factor		5.00%				
7	<b>Operation &amp; Maintenance</b>		O&M Expenses	Rs Lakh	50.05	
			O & M Expenses Escalation	%	3.84%	
8	<b>Generation &amp; Sale of Energy</b>		Total No .Of Hours	Hrs	8766	

# CERC RE Tariff Order for FY 2022-23

## Determination of Tariff Component for Biomass based Rankine cycle Project

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		6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17

Variable 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
Biomass Cost	Rs. Lakh		348.15	365.55	383.83	403.02	423.17	444.33	466.55	489.88	514.37	540.09	567.09	595.45	625.22	656.48	689.31	723.77	759.96	797.96	837.86	879.75	923.74	969.92	1,018.42	1,069.34	1,122.81
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		50.05	51.98	53.97	56.04	58.20	60.43	62.75	65.16	67.66	70.26	72.96	75.76	78.67	81.69	84.83	88.09	91.47	94.98	98.63	102.41	106.35	110.43	114.67	119.08	123.65
Depreciation	Rs Lakh		30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43	30.43
Interest on term loan	Rs Lakh		40.22	37.45	34.68	31.90	29.13	26.35	23.58	20.81	18.03	15.26	12.48	9.71	6.94	4.16	1.39	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		20.50	21.39	22.33	23.32	24.36	25.45	26.60	27.81	29.07	30.41	31.80	33.27	34.82	36.44	38.14	39.71	41.63	43.64	45.74	47.96	50.40	52.83	55.39	58.07	60.88
Return on Equity	Rs Lakh		33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	33.18	42.09	42.09	42.09	42.09	42.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>174.38</b>	<b>174.42</b>	<b>174.59</b>	<b>174.87</b>	<b>175.29</b>	<b>175.85</b>	<b>176.54</b>	<b>177.38</b>	<b>178.38</b>	<b>179.53</b>	<b>180.85</b>	<b>182.35</b>	<b>184.03</b>	<b>185.90</b>	<b>187.96</b>	<b>174.02</b>	<b>179.32</b>	<b>184.84</b>	<b>190.59</b>	<b>196.59</b>	<b>211.88</b>	<b>218.40</b>	<b>225.19</b>	<b>232.28</b>	<b>239.66</b>

### Levelised tariff corresponding to Useful life

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
Per unit Variable Cost	Rs/kWh	<b>8.84</b>	5.64	5.92	6.22	6.53	6.86	7.20	7.56	7.94	8.33	8.75	9.19	9.65	10.13	10.64	11.17	11.73	12.31	12.93	13.58	14.26	14.97	15.72	16.50	17.33	18.19
O&M expn	Rs/kWh	<b>1.14</b>	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.06	1.10	1.14	1.18	1.23	1.27	1.32	1.37	1.43	1.48	1.54	1.60	1.66	1.72	1.79	1.86	1.93	2.00
Depreciation	Rs/kWh	<b>0.44</b>	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
Int. on term loan	Rs/kWh	<b>0.33</b>	0.65	0.61	0.56	0.52	0.47	0.43	0.38	0.34	0.29	0.25	0.20	0.16	0.11	0.07	0.02	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	<b>0.50</b>	0.33	0.35	0.36	0.38	0.39	0.41	0.43	0.45	0.47	0.49	0.52	0.54	0.56	0.59	0.62	0.64	0.67	0.71	0.74	0.78	0.82	0.86	0.90	0.94	0.99
RoE	Rs/kWh	<b>0.55</b>	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.54	0.68	0.68	0.68	0.68	0.68
<b>Total COG</b>	<b>Rs/kWh</b>	<b>11.79</b>	<b>8.47</b>	<b>8.75</b>	<b>9.05</b>	<b>9.36</b>	<b>9.70</b>	<b>10.05</b>	<b>10.42</b>	<b>10.81</b>	<b>11.23</b>	<b>11.66</b>	<b>12.12</b>	<b>12.60</b>	<b>13.11</b>	<b>13.65</b>	<b>14.22</b>	<b>14.55</b>	<b>15.22</b>	<b>15.93</b>	<b>16.67</b>	<b>17.44</b>	<b>18.40</b>	<b>19.26</b>	<b>20.15</b>	<b>21.09</b>	<b>22.08</b>

Variable Cost (Rs/Unit)	<b>5.64</b>
Levelised Tariff (Fixed) (Rs/Unit)	<b>2.95</b>
<b>Levelised Tariff(Rs/Unit)</b>	<b>8.59</b>

### Determination of Additional Depreciation for Biomass Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	652.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	17.21	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	34.43	18.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh	195.60	228.20	91.28	54.77	32.86	19.72	11.83	7.10	4.26	2.56	1.53	0.92	0.55	0.33	0.20	0.12	0.07	0.04	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	178.39	193.77	56.85	20.34	-1.56	-14.71	-22.60	-27.33	-30.17	-31.87	-32.89	-33.51	-33.87	-34.09	-34.23	-34.31	-34.35	-18.73	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	62.34	67.71	19.87	7.11	-0.55	-5.14	-7.90	-9.55	-10.54	-11.14	-11.49	-11.71	-11.84	-11.91	-11.96	-11.99	-12.00	-6.55	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.09	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17	6.17
Per unit benefit	Rs/Unit	2.02	1.10	0.32	0.12	-0.01	-0.08	-0.13	-0.15	-0.17	-0.18	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.19	-0.11	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levelised (Rs./Unit)	<b>7.92</b>
Electricity Generation (Levelised) (Rs./Unit)	<b>5.91</b>
<b>Levelised benefit (Rs./Unit)</b>	<b>0.13</b>

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<b>Annexure 2.8 I</b>							
<b>Assumptions for Biomass Based Rankine Cycle Project Parameters: Other States</b>							
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Parameters</b>		
1	<b>Power Generation</b>	<u>Capacity</u>	Installed Power Generation Capacity	MW	1		
			Auxiliary Consumption	%	12.00%		
			PLF	%	80.00%		
			Useful Life	Years	25		
2	<b>Project Cost</b>	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	652		
3	<b>Financial Assumptions</b>	<u>Debt: Equity</u>	Debt	%	70%		
			Equity	%	30%		
			Total Debt Amount	Rs Lakh	456.40		
			Total Equity Amount	Rs Lakh	195.60		
			<u>Debt Component</u>	Loan Amount	Rs Lakh	456.40	
				Moratorium Period	years	0	
				Repayment Period( incld Moratorium)	years	15	
					Interest Rate	%	9.12%
			<u>Equity Component</u>	Equity amount	Rs Lakh	195.60	
				Return on Equity (upto 20 years)	% p.a	16.96%	
				Return on Equity (After 20 years)		21.52%	
				Discount Rate ( equiv. to WACC)	%	8.35%	
4	<b>Financial Assumptions</b>	<u>Fiscal Assumptions</u>	Income Tax	%	34.94%		
			MAT Rate	%	17.47%		
			<u>Depreciation</u>	Depreciation Rate( Power Plant)	%	4.67%	
				Depreciation Rate 16th year onwards	%	2.00%	
5	<b>Working Capital</b>	<u>For Fixed Charges</u>					
			O&M Charges	Months	1		
			Maintenance Spare	(% of O&M expenses)		15.00%	
			Receivables for Debtors	Months	1.5		
			<u>For Variable Charges</u>				
				Biomass Stock	Months	4	
				Interest On Working Capital	%	10.62%	
6	<b>Fuel Related Assumptions</b>	<u>Heat Rate</u>	After stabilization period	Kcal/kWh	4125		
			During stabilization period	Kcal/kWh	4125		
			Base Price	Rs/T	3921.59		
			GCV-Biomass	Kcal/kg	3100.00		
			Biomass Price Escalation Factor		5.00%		
7	<b>Operation &amp; Maintenance</b>	O&M Expenses		Rs Lakh	50.05		
			O & M Expenses Escalation	%	3.84%		
8	<b>Generation &amp; Sale of Energy</b>	Total No .Of Hours		Hrs	8766		





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<b>Assumptions for Non-Fossil Fuel based co-generation Project</b>				<b>Annexure - 3A</b>	
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Andhra Pradesh</b>
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	8.50%
			Auxiliary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	For First 6 Months	45.00%
			PLF(during first year after Stablization)	Next six months	45.00%
			PLF(second year onwards)	Second Year Onwards	45.00%
			Useful Life	Years	25
			2	Project Cost	Capital Cost/MW
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
			Total Equity Amout	Rs Lakh	140.10
		Debt Component	Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation		
		Depreciation Rate( Power Plant)	%	4.67%	
		Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare (% of O&M exepenses)		15.00%
		Receivables for Debtors	Months	1.5	
		For Variable Charges			
		Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%	
6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh	26.44	
		Total O & M Expenses Escalation	%	3.84%	
7	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2070.50
			GCV-Bagasse	Kcal/kg	2250.00
			Bagasse Price Escalation Factor		5.00%
8	Generation & Sale of Energy	Total No .Of Hours			8766.00



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<b>Assumptions for Non-Fossil Fuel based co-generation Project</b>				<b>Annexure - 3B</b>	
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Haryana</b>
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	8.50%
			Auxiliary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	For First 6 Months	53.00%
			PLF(during first year after Stablization)	Next six months	53.00%
			PLF(second year onwards)	Second Year Onwards	53.00%
			Useful Life	Years	25
			2	Project Cost	Capital Cost/MW
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
			Total Equity Amout	Rs Lakh	140.10
		Debt Component	Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation		
		Depreciation Rate( Power Plant)	%	4.67%	
		Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare (% of O&M exepenses)		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
		Interest On Working Capital	%	10.62%	
		6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh
Total O & M Expenses Escalation	%			3.84%	
Fuel Related Assumptions					
7	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2944.78
			GCV-Bagasse	Kcal/kg	2250.00
			Bagasse Price Escalation Factor		5.00%
8	Generation & Sale of Energy	Total No .Of Hours			8766.00



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Assumptions for Non-Fossil Fuel based co-generation Project				Annexure - 3C	
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Maharashtra
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	8.50%
			Auxiliary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	For First 6 Months	60.00%
			PLF(during first year after Stablization)	Next six months	60.00%
			PLF(second year onwards)	Second Year Onwards	60.00%
			Useful Life	Years	25
			2	Project Cost	Capital Cost/MW
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
			Total Equity Amout	Rs Lakh	140.10
		Debt Component	Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation		
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges			
		O&M Charges	Months	1	
		Maintenance Spare (% of O&M exepenses)		15.00%	
		Receivables for Debtors	Months	1.5	
		For Variable Charges			
		Biomass Stock	Months	4	
6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh	26.44	
		Total O & M Expenses Escalation	%	3.84%	
		Interest On Working Capital	%	10.62%	
7	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2901.78
			GCV-Bagasse	Kcal/kg	2250.00
			Bagasse Price Escalation Factor		5.00%
8	Generation & Sale of Energy	Total No .Of Hours			8766.00



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<b>Assumptions for Non-Fossil Fuel based co-generation Project</b>				<b>Annexure - 3D</b>	
<b>S. No.</b>	<b>Assumption Head</b>	<b>Sub-Head</b>	<b>Sub-Head (2)</b>	<b>Unit</b>	<b>Punjab</b>
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	8.50%
			Auxiliary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	For First 6 Months	53.00%
			PLF(during first year after Stablization)	Next six months	53.00%
			PLF(second year onwards)	Second Year Onwards	53.00%
			Useful Life	Years	25
			2	Project Cost	Capital Cost/MW
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
			Total Equity Amout	Rs Lakh	140.10
		Debt Component	Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation		
		Depreciation Rate( Power Plant)	%	4.67%	
		Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare (% of O&M exepenses)		15.00%
		For Variable Charges	Receivables for Debtors	Months	1.5
			Biomass Stock	Months	4
		Interest On Working Capital	%	10.62%	
		6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh
Total O & M Expenses Escalation	%			3.84%	
Fuel Related Assumptions					
7		Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2591.98
			GCV-Bagasse	Kcal/kg	2250.00
			Bagasse Price Escalation Factor		5.00%
8	Generation & Sale of Energy	Total No .Of Hours			8766.00





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Assumptions for Non-Fossil Fuel based co-generation Project				Annexure - 3E		
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Tamil Nadu	
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1	
			Auxiliary Consumption during stabilisation	%	8.50%	
			Auxiliary Consumption after stabilisation	%	8.50%	
			PLF(Stablization for 6 months)	For First 6 Months	60.00%	
			PLF(during first year after Stablization)	Next six months	60.00%	
			PLF(second year onwards)	Second Year Onwards	60.00%	
			Useful Life	Years	25	
			2	Project Cost	Capital Cost/MW	Power Plant Cost
3	Sources of Fund	Debt: Equity	Debt	%	70%	
			Equity	%	30%	
			Total Debt Amount	Rs Lakh	326.90	
			Total Equity Amout	Rs Lakh	140.10	
		Debt Component	Loan Amount	Rs Lakh	326.90	
			Moratorium Period	years	0	
			Repayment Period	years	15	
			Interest Rate	%	9.12%	
		Equity Component	Equity amount	Rs Lacs	140.10	
			Return on Equity (upto 20 years)	% p.a	16.96%	
			Return on Equity (after 20 years)	% p.a	21.52%	
			Discount Rate		8.35%	
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%	
			MAT Rate	%	17.47%	
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%	
			Depreciation Rate 16th year onwards	%	2.00%	
5	Working Capital	For Fixed Charges	O&M Charges	Months	1	
			Maintenance Spare	(% of O&M expenses)	15.00%	
		For Variable Charges	Receivables for Debtors	Months	1.5	
			Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%		
		6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh	26.44
				Total O & M Expenses Escalation	%	3.84%
7	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00	
			During stabilization period	Kcal/kWh	3600.00	
		Bagasse	Base Price	Rs/T	2230.36	
			GCV-Bagasse	Kcal/kg	2250.00	
			Bagasse Price Escalation Factor		5.00%	
8	Generation & Sale of Energy	Total No .Of Hours			8766.00	



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Assumptions for Non-Fossil Fuel based co-generation Project			Annexure - 3F		
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Telangana
1	Power Generation	Capacity			
		Installed Power Generation Capacity	MW	1	
		Auxiliary Consumption during stabilisation	%	8.50%	
		Auxiliary Consumption after stabilisation	%	8.50%	
		PLF(Stablization for 6 months)	For First 6 Months	53.00%	
		PLF(during first year after Stablization)	Next six months	53.00%	
		PLF(second year onwards)	Second Year Onwards	53.00%	
		Useful Life	Years	25	
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
3	Sources of Fund	Debt: Equity			
		Debt	%	70%	
		Equity	%	30%	
		Total Debt Amount	Rs Lakh	326.90	
		Total Equity Amout	Rs Lakh	140.10	
		Debt Component			
		Loan Amount	Rs Lakh	326.90	
		Moratorium Period	years	0	
		Repayment Period	years	15	
		Interest Rate	%	9.12%	
		Equity Component			
		Equity amount	Rs Lacs	140.10	
		Return on Equity (upto 20 years)	% p.a	16.96%	
Return on Equity (after 20 years)	% p.a	21.52%			
Discount Rate		8.35%			
4	Financial Assumptions	Fiscal Assumptions			
		Income Tax	%	34.94%	
		MAT Rate	%	17.47%	
		Depreciation			
		Depreciation Rate( Power Plant)	%	4.67%	
Depreciation Rate 16th year onwards	%	2.00%			
5	Working Capital	For Fixed Charges			
		O&M Charges	Months	1	
		Maintenance Spare	(% of O&M exepenses)	15.00%	
		Receivables for Debtors	Months	1.5	
		For Variable Charges			
		Biomass Stock	Months	4	
		Interest On Working Capital	%	10.62%	
6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh	26.44	
		Total O & M Expenses Escalation	%	3.84%	
7	Fuel Related Assumptions	Heat Rate			
		After stabilization period	Kcal/kWh	3600.00	
		During stabilization period	Kcal/kWh	3600.00	
		Bagasse			
		Base Price	Rs/T	2069.39	
		GCV-Bagasse	Kcal/kg	2250.00	
Bagasse Price Escalation Factor		5.00%			
8	Generation & Sale of Energy	Total No .Of Hours		8766.00	



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Assumptions for Non-Fossil Fuel based co-generation Project				Annexure - 3G	
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Uttar Pradesh
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	8.50%
			Auxiliary Consumption after stabilisation	%	8.50%
			PLF(Stablization for 6 months)	For First 6 Months	45.00%
			PLF(during first year after Stablization)	Next six months	45.00%
			PLF(second year onwards)	Second Year Onwards	45.00%
			Useful Life	Years	25
			2	Project Cost	Capital Cost/MW
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	326.90
			Total Equity Amout	Rs Lakh	140.10
		Debt Component	Loan Amount	Rs Lakh	326.90
			Moratorium Period	years	0
			Repayment Period	years	15
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	140.10
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
			Depreciation		
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges			
		O&M Charges	Months	1	
		Maintenance Spare (% of O&M exepenses)		15.00%	
		Receivables for Debtors	Months	1.5	
		For Variable Charges			
		Biomass Stock	Months	4	
6	Operation & Maintenance	O&M Cost of power plant	Rs Lakh	26.44	
		Total O & M Expenses Escalation	%	3.84%	
7	Fuel Related Assumptions	Heat Rate	After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse	Base Price	Rs/T	2309.74
			GCV-Bagasse	Kcal/kg	2250.00
			Bagasse Price Escalation Factor		5.00%
8	Generation & Sale of Energy	Total No .Of Hours			8766.00



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Assumptions for Non-Fossil Fuel based co-generation Project		Annexure - 3H			
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Other States
1	Power Generation	Capacity			
		Installed Power Generation Capacity		MW	1
		Auxiliary Consumption during stabilisation		%	8.50%
		Auxiliary Consumption after stabilisation		%	8.50%
		PLF(Stablization for 6 months)		For First 6 Months	53.00%
		PLF(during first year after Stablization)		Next six months	53.00%
		PLF(second year onwards)		Second Year Onwards	53.00%
		Useful Life		Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	467.00
3	Sources of Fund	Debt: Equity			
		Debt		%	70%
		Equity		%	30%
		Total Debt Amount		Rs Lakh	326.90
		Total Equity Amout		Rs Lakh	140.10
		Debt Component			
		Loan Amount		Rs Lakh	326.90
		Moratorium Period		years	0
		Repayment Period		years	15
		Interest Rate		%	9.12%
		Equity Component			
		Equity amount		Rs Lacs	140.10
		Return on Equity (upto 20 years)		% p.a	16.96%
Return on Equity (after 20 years)		% p.a	21.52%		
Discount Rate			8.35%		
4	Financial Assumptions	Fiscal Assumptions			
		Income Tax		%	34.94%
		MAT Rate		%	17.47%
		Depreciation			
		Depreciation Rate( Power Plant)		%	4.67%
Depreciation Rate 16th year onwards		%	2.00%		
5	Working Capital	For Fixed Charges			
		O&M Charges		Months	1
		Maintenance Spare (% of O&M exepenses)			15.00%
		Receivables for Debtors		Months	1.5
		For Variable Charges			
		Biomass Stock		Months	4
		Interest On Working Capital		%	10.62%
6	Operation & Maintenance	O&M Cost of power plant		Rs Lakh	26.44
		Total O & M Expenses Escalation		%	3.84%
7	Fuel Related Assumptions	Heat Rate		Kcal/kWh	3600.00
			After stabilization period	Kcal/kWh	3600.00
			During stabilization period	Kcal/kWh	3600.00
		Bagasse			
		Base Price		Rs/T	2507.09
		GCV-Bagasse		Kcal/kg	2250.00
Bagasse Price Escalation Factor			5.00%		
8	Generation & Sale of Energy	Total No .Of Hours			8766.00



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Cogeneration Projects : 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	
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	4.25	4.25	4.25	4.25	4.25	
Variable 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	
Biomass Cost		Rs. Lakh		186.37	195.68	205.47	215.74	226.53	237.86	249.75	262.24	275.35	289.11	303.57	318.75	334.69	351.42	368.99	387.44	406.81	427.15	448.51	470.94	494.48	519.21	545.17	572.43	601.05	
Per unit Variable Cost		Rs/kWh		4.38	4.60	4.83	5.07	5.33	5.60	5.87	6.17	6.48	6.80	7.14	7.50	7.87	8.27	8.68	9.11	9.57	10.05	10.55	11.08	11.63	12.21	12.82	13.47	14.14	
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		26.44	27.45	28.51	29.60	30.74	31.92	33.15	34.42	35.74	37.11	38.54	40.02	41.56	43.15	44.81	46.53	48.32	50.17	52.10	54.10	56.18	58.33	60.57	62.90	65.31	
Depreciation		Rs Lakh		21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	21.79	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	9.34	
Interest on term loan		Rs Lakh		28.81	26.82	24.84	22.85	20.86	18.88	16.89	14.90	12.92	10.93	8.94	6.95	4.97	2.98	0.99	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		11.21	11.68	12.18	12.70	13.25	13.83	14.43	15.07	15.74	16.45	17.19	17.97	18.79	19.65	20.55	21.35	22.37	23.45	24.57	25.76	27.08	28.39	29.75	31.19	32.69	
Return on Equity		Rs Lakh		23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	23.77	
<b>Total Fixed Cost</b>		<b>Rs Lakh</b>		<b>112.02</b>	<b>111.52</b>	<b>111.08</b>	<b>110.71</b>	<b>110.41</b>	<b>110.18</b>	<b>110.03</b>	<b>109.95</b>	<b>109.96</b>	<b>110.05</b>	<b>110.23</b>	<b>110.50</b>	<b>110.87</b>	<b>111.34</b>	<b>111.91</b>	<b>100.98</b>	<b>103.79</b>	<b>106.72</b>	<b>109.78</b>	<b>112.96</b>	<b>122.75</b>	<b>126.21</b>	<b>129.81</b>	<b>133.57</b>	<b>137.49</b>	
Per unit Fixed Cost		Rs/kWh		2.64	2.62	2.61	2.60	2.60	2.59	2.59	2.59	2.59	2.59	2.59	2.60	2.61	2.62	2.63	2.38	2.44	2.51	2.58	2.66	2.89	2.97	3.05	3.14	3.23	
Levilled tariff corresponding to Useful life		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 Variable Cost		Rs/kWh		6.87	4.38	4.60	4.83	5.07	5.33	5.60	5.87	6.17	6.48	6.80	7.14	7.50	7.87	8.27	8.68	9.11	9.57	10.05	10.55	11.08	11.63	12.21	12.82	13.47	14.14
O&M expn		Rs/kWh		0.87	0.62	0.65	0.67	0.70	0.72	0.75	0.78	0.81	0.84	0.87	0.91	0.94	0.98	1.02	1.05	1.09	1.14	1.18	1.23	1.27	1.32	1.37	1.42	1.48	1.54
Depreciation		Rs/kWh		0.46	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	0.51	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	0.22	
Int. on term loan		Rs/kWh		0.34	0.68	0.63	0.58	0.54	0.49	0.44	0.40	0.35	0.30	0.26	0.21	0.16	0.12	0.07	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Int. on working capital		Rs/kWh		0.39	0.26	0.27	0.29	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	0.70	0.73	0.77
RoE		Rs/kWh		0.57	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.71	0.71	0.71	0.71	0.71
<b>Total COG</b>		<b>Rs/kWh</b>		<b>9.50</b>	<b>7.02</b>	<b>7.23</b>	<b>7.45</b>	<b>7.68</b>	<b>7.93</b>	<b>8.19</b>	<b>8.46</b>	<b>8.76</b>	<b>9.06</b>	<b>9.39</b>	<b>9.73</b>	<b>10.10</b>	<b>10.48</b>	<b>10.89</b>	<b>11.31</b>	<b>11.49</b>	<b>12.01</b>	<b>12.56</b>	<b>13.13</b>	<b>13.74</b>	<b>14.52</b>	<b>15.18</b>	<b>15.88</b>	<b>16.61</b>	<b>17.37</b>
Discount Factor				1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Variable Cost				4.38																									
Levilled Tariff (Fixed)				2.63																									
<b>Levilled Tariff</b>				<b>7.01</b>																									

#### Determination of Additional Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.47%
Income Tax (Normal Rates)	34.94%
Capital Cost	467.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	12.33	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	24.66	13.45	0.00	0.00	0.00	0.00	0.00	0.00	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	21	22	23	24	25
Opening	%		100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%		30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%		70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Depn.	Rs Lakh		140.10	163.45	65.38	39.23	23.54	14.12	8.47	5.08	3.05	1.83	1.10	0.66	0.40	0.24	0.14	0.09	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh		127.77	138.79	40.72	14.57	-1.12	-10.54	-16.18	-19.57	-21.61	-22.83	-23.56	-24.00	-24.26	-24.42	-24.52	-24.57	-24.61	-13.42	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh		44.65	48.50	14.23	5.09	-0.39	-3.68	-5.66	-6.84	-7.55	-7.98	-8.23	-8.39	-8.48	-8.53	-8.57	-8.59	-8.60	-4.69	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU		2.13	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	4.25	4.25	4.25	4.25
Per unit benefit	Rs/Unit		2.10	1.14	0.33	0.12	-0.01	-0.09	-0.13	-0.16	-0.18	-0.19	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.20	-0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor			1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor			1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15
Tax Benefit Levilled			5.67																								
Electricity Generation (Levilled)			4.07																								
<b>Levilled benefit</b>			<b>0.14</b>																								

CERC RE Tariff Order for FY 2022-23

Biomass Gasifier Power Projects- Andhra Pradesh					Annexure-4A
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3666.92
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



Biomass Gasifier Power Projects- Haryana					Annexure-4B
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	4174.07
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00

CERC RE Tariff Order for FY 2022-23

Determination of Tariff Component : Biomass Gasifier Power Project

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		6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71		
Variable 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	
Biomass Cost	Rs. Lakh		388.77	408.21	428.62	450.05	472.55	496.18	520.99	547.03	574.39	603.11	633.26	664.92	698.17	733.08	769.73	808.22	848.63	891.06	935.61	982.40	1031.52	1083.09	1137.25	1194.11	1253.81	
Per unit Variable Cost	Rs/kWh		5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.57	8.99	9.44	9.92	10.41	10.93	11.48	12.05	12.65	13.29	13.95	14.65	15.38	16.15	16.96	17.81	18.70	
Fixed Cost	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
O&M Expenses	Rs Lakh		66.11	68.65	71.28	74.02	76.86	79.81	82.88	86.06	89.37	92.80	96.36	100.06	103.91	107.90	112.04	116.34	120.81	125.45	130.26	135.27	140.46	145.85	151.46	157.27	163.31	
Depreciation	Rs Lakh		20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	
Interest on term loan	Rs Lakh		27.33	25.44	23.56	21.67	19.78	17.90	16.01	14.13	12.24	10.35	8.47	6.58	4.70	2.81	0.92	-	-	-	-	-	-	-	-	-	-	
Interest on working Capital	Rs Lakh		22.7	23.70	24.78	25.92	27.12	28.37	29.69	31.07	32.52	34.04	35.64	37.32	39.08	40.93	42.87	44.77	46.93	49.20	51.59	54.09	56.79	59.54	62.43	65.46	68.63	
Return on Equity	Rs Lakh		22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	
Total Fixed Cost	Rs Lakh		159.34	161.03	162.86	164.85	167.00	169.32	171.81	174.49	177.36	180.43	183.70	187.20	190.92	194.87	199.07	192.51	199.14	206.06	213.26	220.76	234.71	242.86	251.34	260.19	269.40	
Per unit Fixed Cost	Rs/kWh		2.71	2.38	2.40	2.43	2.46	2.49	2.52	2.56	2.60	2.64	2.69	2.74	2.79	2.85	2.91	2.97	2.87	2.97	3.07	3.18	3.29	3.50	3.62	3.75	3.88	4.02
Levilled tariff corresponding to Useful life	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 Variable Cost	Rs/kWh	9.08	5.80	6.09	6.39	6.71	7.05	7.40	7.77	8.16	8.57	8.99	9.44	9.92	10.41	10.93	11.48	12.05	12.65	13.29	13.95	14.65	15.38	16.15	16.96	17.81	18.70	
O&M expn	Rs/kWh	1.38	0.99	1.02	1.06	1.10	1.15	1.19	1.24	1.28	1.33	1.38	1.44	1.49	1.55	1.61	1.67	1.73	1.80	1.87	1.94	2.02	2.09	2.17	2.26	2.35	2.44	
Depreciation	Rs/kWh	0.27	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	
Int. on term loan	Rs/kWh	0.20	0.41	0.38	0.35	0.32	0.30	0.27	0.24	0.21	0.18	0.15	0.13	0.10	0.07	0.04	0.01	-	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh	0.51	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	0.61	0.64	0.67	0.70	0.73	0.77	0.81	0.85	0.89	0.93	0.98	1.02	
RoE	Rs/kWh	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	0.34	0.34	0.34	0.34	0.34	0.34	0.34	
Total COG	Rs/kWh	11.80	8.17	8.49	8.82	9.17	9.54	9.92	10.33	10.76	11.21	11.68	12.18	12.71	13.26	13.84	14.45	14.92	15.62	16.36	17.13	17.94	18.88	19.77	20.71	21.69	22.71	
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Variable Cost		5.80																										
Levilled Tariff (Fixed)		2.71																										
<b>Levilled Tariff</b>	<b>Rs/Unit</b>	<b>8.51</b>																										

Determination of Additional Depreciation for Biomass Gasifier Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	443.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	11.70	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	12.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Accelerated Depreciation																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.09%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Deprn.	Rs Lakh	132.90	155.05	62.02	37.21	22.33	13.40	8.04	4.82	2.89	1.74	1.04	0.63	0.38	0.23	0.14	0.08	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	
Net Depreciation Benefit	Rs Lakh	121.20	131.66	38.63	13.82	-1.06	-9.99	-15.35	-18.57	-20.50	-21.65	-22.35	-22.77	-23.02	-23.17	-23.26	-23.31	-23.34	-12.73	0.02	0.01	0.01	0.00	0.00	0.00	0.00	
Tax Benefit	Rs Lakh	42.35	46.01	13.50	4.83	-0.37	-3.49	-5.36	-6.49	-7.16	-7.57	-7.81	-7.96	-8.04	-8.09	-8.13	-8.15	-8.16	-4.45	0.01	0.00	0.00	0.00	0.00	0.00	0.00	
Energy generation	MU	3.35	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	
Per unit benefit	Rs/Unit	1.26	0.69	0.20	0.07	-0.01	-0.05	-0.08	-0.10	-0.11	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levilled	5.38	Rs/Unit
Electricity Generation (Levilled)	6.42	Rs/Unit
<b>Levilled benefit</b>	<b>0.08</b>	<b>Rs/Unit</b>

Biomass Gasifier Power Projects- Maharashtra					Annexure-4C
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	4268.88
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



Biomass Gasifier Power Projects- Punjab					Annexure-4D
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	4365.90
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00





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Biomass Gasifier Power Projects- Rajasthan					Annexure-4E
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3643.76
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



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Biomass Gasifier Power Projects- Tamil Nadu					Annexure-4F
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3607.38
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



CERC RE Tariff Order for FY 2022-23

Biomass Gasifier Power Projects- Telangana					Annexure-4G
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3666.92
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



CERC RE Tariff Order for FY 2022-23

Biomass Gasifier Power Projects- Uttar Pradesh					Annexure-4H
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3730.86
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00



## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component : Biomass Gasifier Power Project

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		6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	
<b>Variable Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Biomass Cost	Rs. Lakh		347.49	364.86	383.11	402.26	422.37	443.49	465.67	488.95	513.40	539.07	566.02	594.32	624.04	655.24	688.00	722.40	758.52	796.45	836.27	878.08	921.99	968.09	1016.49	1067.32	1120.68	
<b>Per unit Variable Cost</b>	<b>Rs/kWh</b>		5.18	5.44	5.71	6.00	6.30	6.61	6.94	7.29	7.66	8.04	8.44	8.86	9.31	9.77	10.26	10.77	11.31	11.88	12.47	13.09	13.75	14.44	15.16	15.92	16.71	
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
O&M Expenses	Rs Lakh		66.11	68.65	71.28	74.02	76.86	79.81	82.88	86.06	89.37	92.80	96.36	100.06	103.91	107.90	112.04	116.34	120.81	125.45	130.26	135.27	140.46	145.85	151.46	157.27	163.31	
Depreciation	Rs Lakh		20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69
Interest on term loan	Rs Lakh		27.33	25.44	23.56	21.67	19.78	17.90	16.01	14.13	12.24	10.35	8.47	6.58	4.70	2.81	0.92	-	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		20.6	21.56	22.54	23.56	24.64	25.77	26.96	28.20	29.51	30.88	32.32	33.84	35.43	37.09	38.84	40.53	42.49	44.54	46.69	48.94	51.39	53.87	56.47	59.20	62.07	
Return on Equity	Rs Lakh		22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>157.31</b>	<b>158.89</b>	<b>160.61</b>	<b>162.49</b>	<b>164.52</b>	<b>166.72</b>	<b>169.08</b>	<b>171.62</b>	<b>174.35</b>	<b>177.27</b>	<b>180.39</b>	<b>183.72</b>	<b>187.26</b>	<b>191.03</b>	<b>195.04</b>	<b>188.28</b>	<b>194.70</b>	<b>201.39</b>	<b>208.36</b>	<b>215.61</b>	<b>229.31</b>	<b>237.18</b>	<b>245.39</b>	<b>253.93</b>	<b>262.84</b>	
<b>Per unit Fixed Cost</b>	<b>Rs/kWh</b>	2.67	2.35	2.37	2.40	2.42	2.45	2.49	2.52	2.56	2.60	2.64	2.69	2.74	2.79	2.85	2.91	2.81	2.90	3.00	3.11	3.22	3.42	3.54	3.66	3.79	3.92	
<b>Levillised tariff corresponding to Useful life</b>																												
<b>Per Unit Cost of Generation</b>	<b>Unit</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>		
Per unit Variable Cost	Rs/kWh	8.12	5.18	5.44	5.71	6.00	6.30	6.61	6.94	7.29	7.66	8.04	8.44	8.86	9.31	9.77	10.26	10.77	11.31	11.88	12.47	13.09	13.75	14.44	15.16	15.92	16.71	
O&M expn	Rs/kWh	1.38	0.99	1.02	1.06	1.10	1.15	1.19	1.24	1.28	1.33	1.38	1.44	1.49	1.55	1.61	1.67	1.73	1.80	1.87	1.94	2.02	2.09	2.17	2.26	2.35	2.44	
Depreciation	Rs/kWh	0.27	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	
Int. on term loan	Rs/kWh	0.20	0.41	0.38	0.35	0.32	0.30	0.27	0.24	0.21	0.18	0.15	0.13	0.10	0.07	0.04	0.01	-	-	-	-	-	-	-	-	-	-	
Int. on working capital	Rs/kWh	0.46	0.31	0.32	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	0.60	0.63	0.66	0.70	0.73	0.77	0.80	0.84	0.88	0.93	
RoE	Rs/kWh	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	0.34	0.34	0.34	0.34	0.34	0.34	0.34	
<b>Total COG</b>	<b>Rs/kWh</b>	<b>10.79</b>	<b>7.53</b>	<b>7.81</b>	<b>8.11</b>	<b>8.42</b>	<b>8.75</b>	<b>9.10</b>	<b>9.47</b>	<b>9.85</b>	<b>10.26</b>	<b>10.68</b>	<b>11.13</b>	<b>11.60</b>	<b>12.10</b>	<b>12.62</b>	<b>13.17</b>	<b>13.58</b>	<b>14.21</b>	<b>14.88</b>	<b>15.58</b>	<b>16.31</b>	<b>17.17</b>	<b>17.97</b>	<b>18.82</b>	<b>19.70</b>	<b>20.63</b>	
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Variable Cost	5.18																											
Levillised Tariff (Fixed)	2.67																											
<b>Levillised Tariff</b>	<b>7.85</b>	<b>Rs/Unit</b>																										

### Determination of Additional Depreciation for Biomass Gasifier Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	443.00

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	11.70	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	12.76	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Accelerated Depreciation</b>																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	132.90	155.05	62.02	37.21	22.33	13.40	8.04	4.82	2.89	1.74	1.04	0.63	0.38	0.23	0.14	0.08	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	121.20	131.66	38.63	13.82	-1.06	-9.99	-15.35	-18.57	-20.50	-21.65	-22.35	-22.77	-23.02	-23.17	-23.26	-23.31	-23.34	-23.34	-12.73	0.02	0.01	0.01	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	42.35	46.01	13.50	4.83	-0.37	-3.49	-5.36	-6.49	-7.16	-7.57	-7.81	-7.96	-8.04	-8.09	-8.13	-8.15	-8.16	-8.16	-4.45	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.35	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71
Per unit benefit	Rs/Unit	1.26	0.69	0.20	0.07	-0.01	-0.05	-0.08	-0.10	-0.11	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	
Tax Benefit Levillised	5.38	<b>Rs/Unit</b>																									
Electricity Generation (Levillised)	6.42	<b>Rs/Unit</b>																									
<b>Levillised benefit</b>	<b>0.08</b>	<b>Rs/Unit</b>																									

Biomass Gasifier Power Projects- Other States					Annexure-4I
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption during stabilisation	%	10%
			Auxiliary Consumption after stabilisation	%	10%
			PLF(Stablization for 6 months)	For First 6 Months	85%
			PLF(during first year after Stablization)	Next six months	85%
			PLF(second year onwards)	2 <sup>nd</sup> Year Onwards	85%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	443.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	310.10
			Total Equity Amout	Rs Lakh	132.90
		Debt Component	Loan Amount	Rs Lakh	310.10
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	132.90
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biomass	Specific Fuel Consumption	kg/kWh	1.25
			Base Price	Rs/T	3921.59
			Biomass Price Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00

## CERC RE Tariff Order for FY 2022-23

### Determination of Tariff Component : Biomass Gasifier Power Project

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		6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	
<b>Variable Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Biomass Cost	Rs. Lakh		365.25	383.51	402.69	422.83	443.97	466.16	489.47	513.95	539.64	566.63	594.96	624.71	655.94	688.74	723.17	759.33	797.30	837.16	879.02	922.97	969.12	1017.58	1068.46	1121.88	1177.97	
<b>Per unit Variable Cost</b>	<b>Rs/kWh</b>		<b>5.45</b>	<b>5.72</b>	<b>6.00</b>	<b>6.31</b>	<b>6.62</b>	<b>6.95</b>	<b>7.30</b>	<b>7.66</b>	<b>8.05</b>	<b>8.45</b>	<b>8.87</b>	<b>9.32</b>	<b>9.78</b>	<b>10.27</b>	<b>10.78</b>	<b>11.32</b>	<b>11.89</b>	<b>12.48</b>	<b>13.11</b>	<b>13.76</b>	<b>14.45</b>	<b>15.17</b>	<b>15.93</b>	<b>16.73</b>	<b>17.57</b>	
<b>Fixed Cost</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
O&M Expenses	Rs Lakh		66.11	68.65	71.28	74.02	76.86	79.81	82.88	86.06	89.37	92.80	96.36	100.06	103.91	107.90	112.04	116.34	120.81	125.45	130.26	135.27	140.46	145.85	151.46	157.27	163.31	
Depreciation	Rs Lakh		20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	8.86	
Interest on term loan	Rs Lakh		27.33	25.44	23.56	21.67	19.78	17.90	16.01	14.13	12.24	10.35	8.47	6.58	4.70	2.81	0.92	-	-	-	-	-	-	-	-	-	-	
Interest on working Capital	Rs Lakh		21.5	22.48	23.51	24.58	25.71	26.89	28.13	29.44	30.81	32.24	33.75	35.34	37.00	38.75	40.58	42.36	44.40	46.55	48.80	51.16	53.71	56.31	59.04	61.89	64.89	
Return on Equity	Rs Lakh		22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	22.55	
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>158.18</b>	<b>159.81</b>	<b>161.58</b>	<b>163.50</b>	<b>165.59</b>	<b>167.84</b>	<b>170.26</b>	<b>172.86</b>	<b>175.65</b>	<b>178.63</b>	<b>181.81</b>	<b>185.21</b>	<b>188.83</b>	<b>192.68</b>	<b>196.77</b>	<b>190.10</b>	<b>196.61</b>	<b>203.40</b>	<b>210.46</b>	<b>217.83</b>	<b>231.63</b>	<b>239.62</b>	<b>247.95</b>	<b>256.63</b>	<b>265.66</b>	
<b>Per unit Fixed Cost</b>	<b>Rs/kWh</b>		<b>2.69</b>	<b>2.36</b>	<b>2.38</b>	<b>2.41</b>	<b>2.44</b>	<b>2.47</b>	<b>2.50</b>	<b>2.54</b>	<b>2.58</b>	<b>2.62</b>	<b>2.66</b>	<b>2.71</b>	<b>2.76</b>	<b>2.82</b>	<b>2.87</b>	<b>2.93</b>	<b>2.83</b>	<b>2.93</b>	<b>3.03</b>	<b>3.14</b>	<b>3.25</b>	<b>3.45</b>	<b>3.57</b>	<b>3.70</b>	<b>3.83</b>	<b>3.96</b>
<b>Levillised tariff corresponding to Useful life</b>																												
<b>Per Unit Cost of Generation</b>	<b>Unit</b>	<b>Year--&gt;</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>	<b>18</b>	<b>19</b>	<b>20</b>	<b>21</b>	<b>22</b>	<b>23</b>	<b>24</b>	<b>25</b>	
Per unit Variable Cost	Rs/kWh		8.53	5.45	5.72	6.00	6.31	6.62	6.95	7.30	7.66	8.05	8.45	8.87	9.32	9.78	10.27	10.78	11.32	11.89	12.48	13.11	13.76	14.45	15.17	15.93	16.73	17.57
O&M expn	Rs/kWh		1.38	0.99	1.02	1.06	1.10	1.15	1.19	1.24	1.28	1.33	1.38	1.44	1.49	1.55	1.61	1.67	1.73	1.80	1.87	1.94	2.02	2.09	2.17	2.26	2.35	2.44
Depreciation	Rs/kWh		0.27	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Int. on term loan	Rs/kWh		0.20	0.41	0.38	0.35	0.32	0.30	0.27	0.24	0.21	0.18	0.15	0.13	0.10	0.07	0.04	0.01	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh		0.49	0.32	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	0.63	0.66	0.69	0.73	0.76	0.80	0.84	0.88	0.92	0.97
RoE	Rs/kWh		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	0.34	0.34	0.43	0.43	0.43	0.43	0.43
<b>Total COG</b>	<b>Rs/kWh</b>		<b>11.22</b>	<b>7.81</b>	<b>8.10</b>	<b>8.41</b>	<b>8.74</b>	<b>9.09</b>	<b>9.45</b>	<b>9.84</b>	<b>10.24</b>	<b>10.67</b>	<b>11.11</b>	<b>11.58</b>	<b>12.08</b>	<b>12.60</b>	<b>13.14</b>	<b>13.72</b>	<b>14.16</b>	<b>14.82</b>	<b>15.52</b>	<b>16.25</b>	<b>17.01</b>	<b>17.91</b>	<b>18.75</b>	<b>19.63</b>	<b>20.56</b>	<b>21.53</b>
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Variable Cost			5.45																									
Levillised Tariff (Fixed)			2.69																									
<b>Levillised Tariff</b>	<b>Rs/Unit</b>		<b>8.13</b>																									

### Determination of Additional Depreciation for Biomass Gasifier Power Projects

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	443.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	
Book Depreciation	Rs Lakh	11.70	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	23.39	12.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Accelerated Depreciation</b>																											
Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	
Accelerated Depn.	Rs Lakh	132.90	155.05	62.02	37.21	22.33	13.40	8.04	4.82	2.89	1.74	1.04	0.63	0.38	0.23	0.14	0.08	0.05	0.03	0.02	0.01	0.01	0.00	0.00	0.00	0.00	0.00
Net Depreciation Benefit	Rs Lakh	121.20	131.66	38.63	13.82	-1.06	-9.99	-15.35	-18.57	-20.50	-21.65	-22.35	-22.77	-23.02	-23.17	-23.26	-23.31	-23.34	-23.34	-12.73	0.02	0.01	0.00	0.00	0.00	0.00	0.00
Tax Benefit	Rs Lakh	42.35	46.01	13.50	4.83	-0.37	-3.49	-5.36	-6.49	-7.16	-7.57	-7.81	-7.96	-8.04	-8.08	-8.13	-8.15	-8.16	-8.16	-4.45	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Energy generation	MU	3.35	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71	6.71
Per unit benefit	Rs/Unit	1.26	0.69	0.20	0.07	-0.01	-0.05	-0.08	-0.10	-0.11	-0.11	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.12	-0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15	
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15	

Tax Benefit Levillised	5.38	Rs/Unit
Electricity Generation (Levillised)	6.42	Rs/Unit
<b>Levillised benefit</b>	<b>0.08</b>	<b>Rs/Unit</b>

CERC RE Tariff Order for FY 2022-23

Biogas Power Projects					Annexure-5A
S. No.	Assumption Head	Sub-Head	Sub-Head (2)	Unit	Parameters
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	1
			Auxiliary Consumption	%	12%
			PLF	%	90%
			Useful Life	Years	25
2	Project Cost	Capital Cost/MW	Power Plant Cost	Rs Lakh/MW	886.00
3	Sources of Fund	Debt: Equity	Debt	%	70%
			Equity	%	30%
			Total Debt Amount	Rs Lakh	620.20
			Total Equity Amount	Rs Lakh	265.80
		Debt Component	Loan Amount	Rs Lakh	620.20
			Moratorium Period	years	0
			Repayment Period( incld Moratorium)	years	15.00
			Interest Rate	%	9.12%
		Equity Component	Equity amount	Rs Lacs	265.80
			Return on Equity (upto 20 years)	% p.a	16.96%
			Return on Equity (after 20 years)	% p.a	21.52%
			Discount Rate (Equiv. to WACC)		8.35%
4	Financial Assumptions	Fiscal Assumptions	Income Tax	%	34.94%
			MAT Rate	%	17.47%
		Depreciation	Depreciation Rate( Power Plant)	%	4.67%
			Depreciation Rate 16th year onwards	%	2.00%
5	Working Capital	For Fixed Charges	O&M Charges	Months	1
			Maintenance Spare	(% of O&M exepenses)	15.00%
			Receivables for Debtors	Months	1.5
		For Variable Charges	Biomass Stock	Months	4
			Interest On Working Capital	%	10.62%
6	Fuel Related Assumptions	Biogas	Specific Fuel Consumption	kg/kWh	3
			Biogas Price	Rs/T	14567.76
			Substrate Pice Escalation Factor	%	5.00%
7	Operation & Maintenance		O&M Cost of power plant	Rs Lakh	66.11
			Total O & M Expenses Escalation	%	3.84%
8	Generation & Sale of Energy		Total No .Of Hours		8766.00

## CERC RE Tariff Order for FY 2022-23

Determination of Tariff Component : Biogas Power Project																											
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		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	6.94	6.94	6.94	6.94	6.94
Variable 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
Biomass Cost	Rs. Lakh		371.06	389.61	409.09	429.55	451.03	473.58	497.26	522.12	548.22	575.63	604.42	634.64	666.37	699.69	734.67	771.41	809.98	850.47	893.00	937.65	984.53	#####	#####	1,139.72	1,196.70
Per unit Variable Cost	Rs/kWh		5.34	5.61	5.89	6.19	6.50	6.82	7.16	7.52	7.90	8.29	8.71	9.14	9.60	10.08	10.58	11.11	11.67	12.25	12.86	13.51	14.18	14.89	15.63	16.42	17.24
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		66.11	68.65	71.28	74.02	76.86	79.81	82.88	86.06	89.37	92.80	96.36	100.06	103.91	107.90	112.04	116.34	120.81	125.45	130.26	135.27	140.46	145.85	151.46	157.27	163.31
Depreciation	Rs Lakh		41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35	41.35
Interest on term loan	Rs Lakh		54.66	50.89	47.12	43.35	39.58	35.81	32.04	28.27	24.50	20.73	16.96	13.19	9.42	5.65	1.88	-	-	-	-	-	-	-	-	-	-
Interest on working Capital	Rs Lakh		22.75	23.71	24.72	25.78	26.90	28.08	29.31	30.61	31.97	33.41	34.91	36.50	38.16	39.90	41.74	43.37	45.45	47.62	49.91	52.30	54.98	57.61	60.38	63.28	66.32
Return on Equity	Rs Lakh		45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09	45.09
<b>Total Fixed Cost</b>	<b>Rs Lakh</b>		<b>229.95</b>	<b>229.68</b>	<b>229.56</b>	<b>229.59</b>	<b>229.78</b>	<b>230.14</b>	<b>230.67</b>	<b>231.38</b>	<b>232.28</b>	<b>233.38</b>	<b>234.68</b>	<b>236.19</b>	<b>237.92</b>	<b>239.89</b>	<b>242.10</b>	<b>222.52</b>	<b>229.07</b>	<b>235.88</b>	<b>242.98</b>	<b>250.38</b>	<b>270.36</b>	<b>278.39</b>	<b>286.75</b>	<b>295.47</b>	<b>304.55</b>
Per unit Fixed Cost	Rs/kWh		3.41	3.31	3.31	3.31	3.31	3.31	3.32	3.33	3.35	3.36	3.38	3.40	3.43	3.46	3.49	3.21	3.30	3.40	3.50	3.61	3.89	4.01	4.13	4.26	4.39
Levillised tariff corresponding to Useful life																											
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
Per unit Variable Cost	Rs/kWh		5.34	5.61	5.89	6.19	6.50	6.82	7.16	7.52	7.90	8.29	8.71	9.14	9.60	10.08	10.58	11.11	11.67	12.25	12.86	13.51	14.18	14.89	15.63	16.42	17.24
O&M expn	Rs/kWh	1.33	0.95	0.99	1.03	1.07	1.11	1.15	1.19	1.24	1.29	1.34	1.39	1.44	1.50	1.55	1.61	1.68	1.74	1.81	1.88	1.95	2.02	2.10	2.18	2.27	2.35
Depreciation	Rs/kWh	0.53	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
Int. on term loan	Rs/kWh	0.39	0.79	0.73	0.68	0.62	0.57	0.52	0.46	0.41	0.35	0.30	0.24	0.19	0.14	0.08	0.03	-	-	-	-	-	-	-	-	-	-
Int. on working capital	Rs/kWh	0.49	0.33	0.34	0.36	0.37	0.39	0.40	0.42	0.44	0.46	0.48	0.50	0.53	0.55	0.57	0.60	0.62	0.65	0.69	0.72	0.75	0.79	0.83	0.87	0.91	0.96
RoE	Rs/kWh	0.66	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
<b>Total COG</b>	<b>Rs/kWh</b>		<b>3.41</b>	<b>8.66</b>	<b>8.92</b>	<b>9.20</b>	<b>9.49</b>	<b>9.81</b>	<b>10.14</b>	<b>10.48</b>	<b>10.85</b>	<b>11.24</b>	<b>11.65</b>	<b>12.09</b>	<b>12.54</b>	<b>13.03</b>	<b>13.53</b>	<b>14.07</b>	<b>14.32</b>	<b>14.97</b>	<b>15.65</b>	<b>16.36</b>	<b>17.11</b>	<b>18.08</b>	<b>18.90</b>	<b>19.76</b>	<b>21.62</b>
Discount Factor			1	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Variable Cost		5.34																									
Levillised Tariff (Fixed)		3.41																									
<b>Levillised Tariff</b>	<b>Rs/Unit</b>		<b>8.75</b>																								

### Determination of Additional Depreciation

Depreciation amount	90%
Book Depreciation rate	5.28%
Tax Depreciation rate	40%
Additional Depreciation	20%
Income Tax (MAT)	17.472%
Income Tax (Normal Rates)	34.944%
Capital Cost	886.00

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%	2.88%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Book Depreciation	Rs Lakh	23.39	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	46.78	25.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accelerated Depreciation

Opening	%	100%	70%	35%	21%	13%	8%	5%	3%	2%	1%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Allowed during the year	%	30.00%	35.00%	14.00%	8.40%	5.04%	3.02%	1.81%	1.09%	0.65%	0.39%	0.24%	0.14%	0.08%	0.05%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Closing	%	70.0%	35.0%	21.0%	12.6%	7.6%	4.5%	2.7%	1.6%	1.0%	0.6%	0.4%	0.2%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Accelerated Deprn.	Rs Lakh	265.80	310.10	124.04	74.42	44.65	26.79	16.08	9.65	5.79	3.47	2.08	1.25	0.75	0.45	0.27	0.16	0.10	0.06	0.03	0.02	0.01	0.01	0.00	0.00	0.00

Net Depreciation Benefit	Rs Lakh	242.41	263.32	77.26	27.64	-2.13	-19.99	-30.71	-37.14	-40.99	-43.31	-44.70	-45.53	-46.03	-46.33	-46.51	-46.62	-46.68	-25.46	0.03	0.02	0.01	0.01	0.00	0.00	0.00
Tax Benefit	Rs Lakh	84.71	92.01	27.00	9.66	-0.74	-6.98	-10.73	-12.98	-14.32	-15.13	-15.62	-15.91	-16.08	-16.19	-16.25	-16.29	-16.31	-8.90	0.01	0.01	0.00	0.00	0.00	0.00	0.00
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	6.94	6.94	6.94	6.94
Per unit benefit	Rs/Unit	2.44	1.33	0.39	0.14	-0.01	-0.10	-0.15	-0.19	-0.21	-0.22	-0.22	-0.23	-0.23	-0.23	-0.23	-0.23	-0.23	-0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Discounting Factor		1.00	0.92	0.85	0.79	0.73	0.67	0.62	0.57	0.53	0.49	0.45	0.41	0.38	0.35	0.33	0.30	0.28	0.26	0.24	0.22	0.20	0.19	0.17	0.16	0.15
Applicable Discounting Factor		1.00	0.96	0.89	0.82	0.76	0.70	0.64	0.59	0.55	0.51	0.47	0.43	0.40	0.37	0.34	0.31	0.29	0.27	0.25	0.23	0.21	0.19	0.18	0.16	0.15

Tax Benefit Levillised	10.76	Rs/Unit
Electricity Generation (Levillised)	6.64	Rs/Unit
<b>Levillised benefit</b>	<b>0.16</b>	<b>Rs/Unit</b>

