# RAJASTHAN ELECTRICITY REGULATORY COMMISSION

# JAIPUR

**(Suo-Motu)**

In the matter of:

Determination of Generic Tariff for sale of electricity to Distribution Licensee from Biomass, Biogas and Biomass Gasifier based power plants getting commissioned in the State during FY 2020-21 & FY 2021-22 and revised variable charges of the Biomass power plants commissioned during the period 2009-2015 & 2015-2020.

**Coram:** 1. Sh. Shreemat Pandey, Chairman
2. Sh. S.C. Dinkar, Member
3. Sh. Prithvi Raj, Member

Date of Order: 23.03.2021

**ORDER**

1. The Commission has issued the Rajasthan Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020, on 02.11.2020 (hereinafter referred to as "the RE Tariff Regulations, 2020"), which provide for terms and conditions and the procedure for determination of tariff of the following categories of Renewable Energy (RE) generating stations:

2. As per Regulation 8 of the RE Tariff Regulations, 2020, the Commission shall determine generic tariff for the following types of renewable energy projects:
   a. Biomass Power Project with Rankine Cycle technology ;
   b. Biogas based Power Project; and
   c. Biomass Gasifier based Power Project.

3. Further, Regulation 11.1 of the RE Tariff Regulations,2020 provides as under:

   " *11.1 In case of renewable energy projects for which generic tariff has to be determined as per these regulations, the Commission may determine such generic tariff on Suo-motu basis at the beginning of each year of the Control Period:*

   *Provided that for first year of Control Period i.e., from 1.4.2020 to 31.3.2021, the Generic Tariff Order shall be issued after notifications of these Regulations.”*

4. The Commission, in due discharge of the mandate under Regulation 11.1 of the RE Tariff Regulations, 2020 issued the Draft Order for determination of the generic tariff of the RE projects for the first and second year of control period (i.e., FY 2020-21 and FY 2021-22) for inviting comments from stakeholders.

5. Public notices were issued in the following Newspapers on the dates mentioned against each, inviting comments/suggestions from the interested persons on the draft generic order.

| | |
|---|---|
| Dainik Bhaskar | : 29.01.2021 |
| Rajasthan Patrika | : 29.01.2021 |
| The Times of India | : 29.01.2021 |

6. Public notices along with draft order were also placed on the Commission website.

7. The last date of submission of comments/suggestions was 22.02.2021. The comments/suggestions have been received from the following:
   (i) Rajasthan Biomass Power Developer Association (RBPDA)
   (ii) Indian Biomass Power Association (IBPA) and
   (iii) Ajmer Vidyut Vitran Nigam Limited (AVVNL).

8. The hearing in the matter was held on 10.03.2021. The main comments and views expressed by the stakeholders through their written submissions as well as during the hearing and the Commission's views thereon have been summarized in the following paragraphs. It may be noted that all the suggestions given by the stakeholders have been considered, and the Commission has attempted to elaborate all the suggestions as well as the Commission's decisions on each suggestion in this Order. However, in case any suggestion is not specifically elaborated, it does not mean that the same has not been considered, related changes have been suitably incorporated, wherever necessary.

**Applicability of Generic Tariff Order for Old Plants already set up under 2009 & 2015 Regulations**

**Comments/Suggestions**

9. RBPDA and IBPA submitted that for the plants already established under 2009 & 2015 Regulations, the tariff should be as per Regulations under which plants were set up and not under new Regulations. The Commission has allowed the base fuel price to change on independent survey done every two years. Further, they requested that variable and fixed cost of old plants may continue as per the earlier Regulations in which they have been set up.

**Commission's View/Decision**

10. Regulation 3.3 of RERC RE Tariff Regulations, 2020 already provides that the tariff and other terms and conditions applicable to existing RE Projects supplying power to Distribution Licensee(s) shall be governed by the provisions of the applicable Regulations or Tariff Orders issued by the Commission from time to time.

11. However, the Fuel Cost has been kept same for old as well as new plants as the fuel price is approved based on recommendation of the State Level Committee constituted by the Commission consisting of representatives of Nodal Agency, State Government, Distribution Licensee, and any other organisation as decided by the Commission.

12. Further, the Draft Generic Tariff Order clearly mentions that the tariff determined will be applicable for projects commissioned during this period as follows:

    *"Accordingly, the tariff proposed to be determined for the first year of the control period, shall be applicable for the Projects commissioned during the period from April 1, 2020 till March 31, 2021 and for the second year of the control period, shall be applicable for the Projects commissioned during the period from April 1, 2021 till March 31, 2022. The tariff so determined shall continue to be applicable for the entire duration of the Tariff Period. "*

13. Hence, the Generic Tariff Order determined in this Order shall be applicable for Projects getting Commissioned in first and second year of the control period.

**Financial Parameters**

**a) Debt Equity Ratio**

**Comments/Suggestions**

14. AVVNL submitted that the Debt Equity ratio was envisaged at a time when surplus funds were required for the development of RE sector as it was at its nascent stage but now RE market is matured and loans for RE projects are available at low interest rate. Further, the lowering of the equity base would reduce the ROE amount to be paid in turn lowering the cost of capital.

15. AVVNL requested the Commission to revise the normative debt equity ratio from 70:30 to 80:20.

**b) Interest on Long Term Loans**

**Comments/Suggestions**

16. AVVNL submitted that the Commission has to reduce the normative interest rates considering the lower interest rate prevailing in the market for RE projects as it will help in reducing the capital cost.

17. AVVNL also requested that currently same interest rate is applicable for all technologies and instead interest rates may be determined in differentiated manner as per various technologies options.

**c) Return on Equity**

**Comments/Suggestions**

18. AVVNL submitted that since the interest rates are falling, the cost of equity should be lower as per the CAPM formulae. Further, the stakeholder also requested to link ROE with G-Sec rates and give a premium over it to the generating companies.

**d) Interest on Working Capital and Working Capital Norms**

**Comments/Suggestions**

19. AVVNL submitted that there has been no change in the interest on working capital in the new regulations and the old regulations. Further, the stakeholder submitted that the normative interest rate on working capital should be reduced considering the lower interest rates prevailing in the country due to promotion of RE investments.

20. AVVNL requested the Commission to reduce the maintenance spares from 20% to 15% of O&M expenses, as allowing a higher % of O&M as maintenances spares would increase the cost of the plant.

**Commission View/Decision**

21. The Commission has specified all the Financial Parameters norms in RERC RE Tariff Regulations, 2020 after following the due consultation process. Further, the Generic Tariff needs to be determined considering the norms specified in the RERC RE Tariff Regulations, 2020 and norms cannot be changed in this Generic Tariff Order.

22. Hence, the Commission decides to retain the provisions in the Draft Generic Tariff Order which are in accordance with the norms specified in the RERC RE Tariff Regulations, 2020.

**Technical Parameters**

**a) Station Heat Rate (SHR) for New Plants**

**Comments/Suggestions**

23. RBPDA and IBPA submitted that in Rajasthan due to scarcity of water, the Air Cooled Condenser (ACC) has been promoted, as it utilizes one tenth of water as required in Water Cooled Condenser (WCC). Further, in the RERC RE Tariff Regulations, 2020, the Commission has fixed SHR norms in line with CERC RE Tariff Regulations, 2020, which is applicable for entire country.

The stakeholders also requested that since Rajasthan is promoting ACC, SHR should be fixed in line with the earlier regulations (which is 240 kCal/ kWh more than WCC) and suggested to increase the SHR fixed for ACC during stabilization period.

**b) Operation and Maintenance (O&M) Expenses and Escalation Rate**

**Comments/Suggestions**

24. RBPDA submitted that in Clause No. 76 of 2009 Regulations, O&M Expenses were Rs. 36.64 Lakh per MW and annual escalation was 5.72%. Based on this assumption, O&M expenses for FY 2021-22 would be Rs. 67.53 Lakh/MW.

Further, the actual O&M expenses are more than Rs. 1 Cr/MW i.e. Rs. 137.48 & Rs 104.77 Lakh/MW for FY 2019-20 & FY 2018-19 respectively.

Hence, RBPDA requested the Commission to consider the O&M Expenses for FY 2021-22 for Water-cooled condenser as Rs. 100 Lakh per MW.

25. RBPDA submitted that escalation of 3.84% is not adequate compared to normal rate of inflation of 5-8% for stores and spares and 10% for salaries and allowances. The fuel prices have risen more than 25% during the year.

RBPDA requested that the Commission to increase the normative escalation rate for O&M Expenses to 5%.

**c) Gross Calorific Value**

**Comments/Suggestions**

26. RBPDA submitted that the calorific value of 3400 kCal/kg is applicable to fresh stock of biomass. Biomass has to be stored as entire biomass required for the year is to be procured in the harvesting season of 3 Months and has been stored for 9 months. This increases the consumption of Biomass higher than the norm approved by Commission due to lower normative GCV. Calorific Value deteriorates in storage due to exposure to sun, wind & rain since biomass is stored in open yards.

27. IBPA submitted that the task force formed in CERC to remove barriers for Biomass sector accepted that GCV of the biomass must be changed from 3400 kCal/kg to 3100 kCal/kg.

Further, the stakeholders submitted the following data:

| **Stakeholder's Observations** | **Moisture (%)** | **GCV (kCal/kg)** |
|---|---|---|
| Mustard Stalks and Husks | 10-12 | 3200 |
| Guar Stalks | 10-12 | 3400 |
| Cotton Stalks | 35-40 | 2800 |
| Juliflora | 32-35 | 2842 |

Hence, RBPDA and IBPA requested that GCV may be revised to 3100 kCal/kg.

### d) Plant Load Factor

**Comments/Suggestions**

28. RBPDA and IBPA submitted that for Biomass based plants, PLF is allowed for the first two years of operation as per earlier Generic Tariff Orders considering the relaxed norms during the stabilisation period, instead of fixing an average 80% from the first year. Since, the Biomass power plants have to use different types of waste and the plants require sometime before it can come up at optimal level.

29. AVVNL submitted that the Commission may increase the PLF of the Biomass plants in future considering the advancement in technology leading to improved efficiency of plants.

### e) Auxiliary Consumption

**Comments/Suggestions**

30. AVVNL submitted that the Commission may explore the possibility for reducing auxiliary consumption norms, considering the increase in usage of energy efficient technologies.

**Commission's View/Decision**

31. The Commission has specified the Technical Parameters norms in the RERC RE Tariff Regulations, 2020 after following the due consultation process. Further, the Generic Tariff needs to be determined considering the norms specified in the RERC RE Tariff Regulations, 2020 and norms cannot be changed in Generic Tariff Order.

32. Hence, the Commission decides to retain the provisions in the Draft Generic Tariff Order which are in accordance with the norms specified in the RERC RE Tariff Regulations, 2020.

### Fuel Price

**Comments/Suggestions**

33. RBPDA and IBPA submitted that the fuel price for FY 2021-22 instead of being kept at same as that for FY 2020-21 must be escalated by 3% over fuel price of FY 2020-21, since there was 40% increase in fuel price (diesel & Petrol prices) and which eventually resulted in increase in Wholesale Price Index (WPI) and Consumer Price Index (CPI) rate.

**Commission's View/Decision**

34. The Commission for the FY 2021-22 has clearly specified in the Draft Generic Tariff Order that for the biomass price has been considered based on State Level Committee Recommendation for FY 2020-21 and the same shall be

subject to revision only based on the recommendations of the State Level Committee.

35. The Commission considering the request of the stakeholders directs Rajasthan Renewable Energy Corporation Ltd. (RREC) to submit the recommendation of the State Level Committee based on the Fuel study for FY 2021-22. Thereafter, the Commission after due consideration of the recommendations will determine the revised variable cost for FY 2021-22 through a separate order,

36. In view of above, the Commission decides to retain the proposed provisions in the Draft Generic Tariff Order at this stage.

37. It is observed that stakeholder have made comments on the provisions of the Regulations which cannot be considered at this stage. Accordingly, Commission considering the provision of the RERC RE Tariff Regulations 2020 determines the levellised generic tariff for RE based generating stations for FY 2020-21 and FY 2021-22 as enclosed in **Annexure - I** to this Order.

| | | |
|---|---|---|
| (Prithvi Raj)<br>Member | (S.C. Dinkar)<br>Member | (Shreemat Pandey)<br>Chairman |

Jaipur,23rd March 2021.

**ANNEXURE- 1**

**APPROVED LEVELLISED GENERIC TARIFF FOR VARIOUS RENEWABLE ENERGY TECHNOLOGIES FOR FY 2020-21 & FY 2021-22.**

1. The levellised generic tariffs for Biomass power project with Rankine Cycle technology, Biogas based power project and Biomass gasifier-based power project, for FY 2020-21 & FY 2021-22 are discussed below.
2. For Solar PV, Floating Solar, Solar Thermal, Wind (onshore and offshore), MSW/RDF, Small Hydro projects, Renewable hybrid energy projects, Renewable energy with storage projects and other emerging renewable energy technologies, the tariff will be project specific. The separate petition is required to be filed for determination of project specific tariff as per Regulation 11.2 of RE Tariff Regulations.

## A. Useful Life

3. The clause (mm) of sub-Regulation 2.1 of Regulation 2 of the RE Tariff Regulations,2020 defines 'useful life' in relation to project from the date of commercial operation (COD) as follows:

| Renewable Energy Projects | Years |
|---|---|
| Biomass power project with Rankine Cycle technology | 25 |
| Biomass Gasifier based power project | 25 |
| Biogas based power project | 25 |

## B. Control Period

4. Regulation 5 of the RE Tariff Regulations,2020 specifies that the Control Period for determination of tariff for renewable energy projects (RE projects) shall be from 01.04.2020 to 31.03.2024. The provision to Regulation 5 specifies that the tariff determined for the RE projects commissioned during the control period, shall remain valid for the tariff period. Accordingly, the tariff determined for the first year of the control period, shall be applicable for the Projects commissioned during the period from April 1, 2020 till March 31, 2021 and for the second year of the control period, shall be applicable for the Projects commissioned during the period from April 1, 2021 till March 31, 2022. The tariff determined shall continue to be applicable for the entire duration of the Tariff Period.

## C. Tariff Structure

5. Regulation 12 of the RE Regulations,2020 stipulates that the tariff for renewable energy technologies shall consist of the following fixed cost 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 project with rankine cycle technology, biomass gasifier based project and biogas based power project, single part tariff with two components i.e. fixed cost component and fuel cost component, is to be determined.

**D. Tariff Design**

7. In terms of Regulation 13 of the RE Tariff Regulations, 2020, the tariff design for renewable energy generating stations is as under:

*"13.1 The generic tariff shall be determined, on levellised basis, considering the year of commissioning of the power 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."*

8. Accordingly, the Commission has determined the fixed cost on levellised basis and fuel cost component for the respective year while determining the generic tariff under this Order.

**E. Levellised Tariff**

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

**F. Discount Factor**

10. Regulations 13.2 of RE Tariff Regulations, 2020 specify methodology to calculate discount factor for the purpose of levellised tariff computation as under:

***"13. Tariff Design***

*… …*

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

11. 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) specified in the Regulations. Considering the normative debt equity ratio and weighted average of the post-tax rates for debt and equity component, the

discount factor is calculated.

12. Interest Rate considered for the loan component (i.e.,70% of capital cost) is 9.00%. 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%[1]. Accordingly, the discount factor derived by this method for all technologies for both FY 2020-21 & FY 2021-22 is 8.30% [{(9.00% x 0.70) x (1 – 34.94%)} + (14.0% x 0.30)]

## G. Capital Cost

13. Regulation 15 of the RE Tariff Regulations, 2020 specifies as under:

*"**15. Capital Cost***

*The normative Capital Cost shall be as specified in the subsequent technology specific chapters:"*

14. The Commission has considered the normative capital cost as specified in RE Tariff Regulations, 2020 for various RE technologies viz. Biomass Power based on Rankine cycle, Biomass Gasifier and Biogas based power projects. The RE Technology specific capital cost of RE projects is discussed as under:

***<u>Capital cost of Biomass based Power Projects (Rankine Based)</u>***

15. The Commission, under Regulation 37 of the RE Tariff Regulations,2020 has specified the normative capital cost for Biomass based Power Projects for FY 2020-21. The Commission considered same normative capital cost for FY 2021-22 also. The Capital cost considered for FY 2020-21 & FY 2021-22 for Biomass Rankine Cycle based projects are as under:

| **Biomass Rankine Cycle Projects** | **Capital Cost FY 2020-21 (Rs lakh/ MW)** | **Capital Cost FY 2021-22 (Rs lakh/ MW)** |
|---|---|---|
| Project with water cooled condenser | 527.78 | 527.78 |
| Project with air cooled condenser | 561.98 | 561.98 |

***<u>Capital cost of Biomass Gasifier Power Projects</u>***

16. The Commission, under Regulation 54 of the RE Tariff Regulations,2020, has specified the normative capital cost for Biomass Gasifier power projects as Rs. 593.49 lakh/MW for FY 2020-21. 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. 443.49 lakh/MW. The net Capital cost considered for

[1] Income Tax rate of 30% + 12% surcharge on IT rate +4% Health and Education cess on IT rate and Surcharge

FY 2020-21 & FY 2021-22 for Biomass Gasifier based projects are as under:

| Biomass Gasifier Based Projects | Capital Cost FY 2020-21 (Rs lakh/ MW) | Capital Cost FY 2021-22 (Rs lakh/ MW) |
|---|---|---|
| Normative Capital Cost | 443.49 | 443.49 |

***Capital cost of Biogas based Power Projects***

17. The Commission, under Regulation 47 of the RE Tariff Regulations,2020, has specified the normative capital cost for Biogas based power projects as Rs. 1156.77 lakh/MW. 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. 856.77 lakh/MW. The net Capital cost considered for FY 2020-21 & FY 2021-22 for Biogas based projects are as under:

| Biogas Based Projects | Capital Cost FY 2020-21 (Rs lakh/ MW) | Capital Cost FY 2021-22 (Rs lakh/ MW) |
|---|---|---|
| Normative Capital Cost | 856.77 | 856.77 |

18. The capital cost for FY 2020-21 & FY 2021-22 in respect of the renewable energy power generating stations is summarized as follows:

| Renewable Energy Projects | Net Capital Cost Norm for FY 2020-21 (Rs. lakh/MW) | Net Capital Cost Norm for FY 2021-22 (Rs. lakh/MW) |
|---|---|---|
| **Biomass Power Project with Rankine Cycle Technology** | | |
| Project with water cooled condenser | 527.78 | 527.78 |
| Project with air cooled condenser | 561.98 | 561.98 |
| **Biomass Gasifier based Power Project** | **443.49** | **443.49** |
| **Biogas based Power Project** | **856.77** | **856.77** |

## H. Debt-Equity Ratio

19. Sub-Regulation 16.1 of Regulation 16 of the RE Tariff Regulations, 2020 specifies debt-equity ratio of 70:30 for determination of generic tariff based on suo-motu petition.

20. 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 for both FY 2020-21 & FY 2021-22 have been worked out as follows:

| Renewable Energy Projects | Debt Amount (Rs. Lakh) | Equity Amount (Rs. Lakh) | Net Capital Cost (Rs. Lakh) |
|---|---|---|---|
| **Biomass Power Project with Rankine Cycle Technology** | - | - | - |
| Project with water cooled condenser | 369.45 | 158.33 | 527.78 |
| Project with air cooled condenser | 393.39 | 168.59 | 561.98 |
| **Biomass Gasifier based Power Project** | **310.44** | **133.05** | **443.49** |
| **Biogas based Power Project** | **599.74** | **257.03** | **856.77** |

## I Return on Equity

21. As regards Rate of Return on Equity, sub-Regulation 19.2 of Regulation 19 of the RE Tariff Regulations, 2020 specifies as under:

***"19. Return on Equity***

*… …*

*19.2 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) for entire Tariff Period.*

22. For computation of Rate of Return on Equity, MAT Rate of 17.47% has been considered for FY 2020-21 & FY 2021-22. Accordingly, Rate of Return for both FY 2020-21 & FY 2021-22 has been computed as 16.96% for entire tariff period.

## J. Interest on Loan

23. Sub-Regulation 17.1 of Regulation 17 of the RE Tariff Regulations, 2020 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:

*"17.1.1 For the purpose of determination of generic tariff and project specific tariff, loan tenure of 15 years shall be considered."*

*"17.2 a) The loans arrived at in the manner indicated in Regulation 16 shall be considered as gross normative loan for calculation for interest on loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.*

*17.2 b) For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above Base Rate prevalent during the last available six months shall be considered.*

*17.2 c) Notwithstanding any moratorium period availed by the generating company or 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."*

24. 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**[2] |
|---|---|
| 10.07.2020 to 09.08.2020 | 7.00% |
| 10.08.2020 to 09.09.2020 | 7.00% |
| 10.09.2020 to 09.10.2020 | 7.00% |
| 10.10.2020 to 09.11.2020 | 7.00% |
| 10.11.2020 to 09.12.2020 | 7.00% |
| 10.12.2020 to 09.01.2021 | 7.00% |
| **Avg. for last Available 6 months** | **7.00%** |

Accordingly, interest rate for loan component for both FY 2020-21 & FY 2021-22 is determined as 9.00%.

[2] Source: https://www.sbi.co.in/web/interest-rates/interest-rates/mclr-historical-data

## K. Depreciation

25. Regulation 18 of the RE Tariff Regulations, 2020 specifies for computation of depreciation in the following manner:

"18.1 *The value base for the purpose of depreciation shall be the Capital Cost determined by the Commission (for generic tariff) or the capital cost admitted by the Commission (for project specific tariff), as the case may be."*

"18.2 *The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset."*

"18.3 *Depreciation rate of 4.67% per annum for first 15 years and remaining depreciation shall be spread over the remaining useful life of the project considering the salvage value of the project as 10% of the project cost shall be considered."*

"18.3 *Depreciation shall be chargeable from the first year of commercial operation:*

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

26. 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 16th year onwards is to be spread over the balance useful life of the RE project as under. The rates of depreciation considered for FY 2020-21 & FY 2021-22 are as under:

| Details | Biomass based | Biomass Gasifier | Biogas |
|---|---|---|---|
| Useful Life (in years) | 25 | 25 | 25 |
| Rate of depreciation for 15 years (%) | 4.67 | 4.67 | 4.67 |
| Rate of depreciation from $16^{th}$ year onwards (%) | 2.00% | 2.00% | 2.00% |

## L. Interest on Working Capital

27. Regulation 20 of the RE Tariff Regulations, 2020 specifies for the working capital requirements of the RE projects as under:

*"20.2 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 clause:*

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

*b) Operation & Maintenance expense for one month;*

*c) Receivables equivalent to one and half (1.5) months of tariff for sale of electricity calculated at normative PLF;*

*d) Maintenance spare @ 20% of operation and maintenance expenses.*

*"20.3 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*.

*"20.4 Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above Base Rate prevalent during the last available six months for the determination of tariff."*

28. Receivables equivalent to one and half (1.5) months of tariff for sale of electricity calculated on the plant load factor and four months of fuel cost have been considered.

29. Interest rate has been computed as average of State Bank of India MCLR (One Year Tenor) prevalent during the last available six months plus 300 basis points. In accordance with the above the interest rate on working capital considered for FY 2020-21 & FY 2021-22 is equivalent to 10.00%.

30. The parameters considered for computation of the interest on working capital during FY 2020-21 & FY 2021-22 are stipulated in following table:

| Details | Biomass Based (Rankine Cycle), Biomass Gasifier and Biogas. |
|---|---|
| **(a) For Fixed Charge** | |
| O&M Expenses (Month) | 1 month |
| Maintenance Spares (%) of O&M Expenses | 20% |
| Receivables (Days) | 45 (1.5 Months) |
| **(b) For Variable Charge** | |
| Biomass/Biogas Stock (Months) | 4 months |
| **(c) Rate of Interest (%)** | 10.00% |

## M. Operation and Maintenance Expenses

31. Regulation 21 of the RE Tariff Regulations, 2020 specifies for Operation and Maintenance Expenses (O&M expenses) in respect of RE projects as following:

***21. Operation and Maintenance Expenses***

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

*"21.2 Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2020- 21) under these Regulations shall be escalated at the rate of 3.84% per annum over the Tariff Period."*

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

**(a) Biomass Power Project based on Ranking Cycle Technology:** Regulation 42 of RE Tariff Regulations provides that the normative O& M expenses for Biomass power project based on Rankine Cycle Technology for first year of the Control Period (FY 2020-21) shall be Rs. 46.46 Lakh per MW for water cooled condenser and Rs 49.53 Lakh per MW for air cooled condenser. The Normative O&M expenses of FY 2020-21 have been escalated at the rate of 3.84% to arrive at O&M expenses for FY 2021-22 as Rs 48.24 Lakh/MW for water cooled condenser and Rs 51.43 Lakh/MW for air cooled condenser by considering escalation factor of 3.84%.

**(b) Biomass Gasifier:** As per Regulation 58 of the RE Tariff Regulations, normative O&M expenses for Biomass Gasifier power project shall be Rs. 61.62 lakh/MW for the first year of Control Period (FY 2020-21). The Normative O&M expenses of FY 2020-21 have been escalated at the rate of 3.84% to arrive at O&M expenses for FY 2021-22 as Rs 63.99 Lakh/MW.

**(c) Biogas:** As per Regulation 51 of the RE Tariff Regulations, normative O&M expenses for biogas shall be Rs. 61.62 Lakh/MW for the first year of Control Period (FY2020-21). The Normative O&M expenses of FY 2020-21 have been escalated at the rate of 3.84% to arrive at O&M expenses for FY 2021-22 as Rs 63.99 Lakh/MW

33. The Commission has considered the normative O&M Expenses as specified in RE Tariff Regulations, 2020 for different RE technologies as stated below:

| Renewable Energy Projects | Normative O&M Expenses for FY 2020-21 (Rs. lakh/MW) | Normative O&M Expenses for FY 2021-22 (Rs. lakh/MW) |
|---|---|---|
| **Biomass Power project based on Rankine Cycle** | | |
| Project with water cooled condenser | 46.46 | 48.24 |
| Project with air cooled condenser | 49.53 | 51.43 |
| **Biomass Gasifier based Power Project** | **61.62** | **63.99** |
| **Biogas based Power Project** | **61.62** | **63.99** |

## N. Plant Load Factor (PLF)

34. The Commission specifies number of hours for calculation of CUF/PLF as 8760.

35. The Commission has considered the Plant Load Factor (PLF) for Biomass (Rankine Cycle), Biomass Gasifier, and Biogas based power projects as specified in Regulations 38, 55 and 48 of the RE Tariff Regulations, 2020. The PLF considered are as under:

| Renewable Energy Projects | PLF (%) |
|---|---|
| (i) Biomass Based (Rankine Cycle) | 80% |
| (ii) Biomass Gasifier | 85% |
| (iii) Biogas | 90% |

## O. Auxiliary Consumption

36. The Commission has considered the Auxiliary Consumption as specified Regulations 39, 56 and 49 of the RE Tariff Regulations, 2020 which is shown in the following Table:

| Renewable Energy Projects | Auxiliary Consumption (%) |
|---|---|
| (i) Biomass Power Project with Rankine Cycle | |
| a) Using Water Cooled Condenser | 10.00% |

| Renewable Energy Projects | Auxiliary Consumption (%) |
|---|---|
| b) Using Air Cooled Condenser | 12.00% |
| (ii) Biomass Gasifier Power Project | 10.00% |
| (iii) Biogas Power Project | 12.00% |

**P. Station Heat Rate**

37. The Commission has considered Station Heat Rates (SHR) specified under Regulations 40 of the RE Tariff Regulations for biomass power project based on ranking cycle as under:

| Renewable Energy Projects | SHR (kcal/kWh) |
|---|---|
| Biomass power project based on Rankine Cycle | (a) 4200: For projects using travelling grate boilers<br>(b) 4125: For Projects using AFBC boilers |

**Q. Fuel Parameters**

***(a) <u>Fuel Mix</u>***

38. Regulation 57 of the RE Tariff Regulations, 2020 specifies that the normative specific fuel consumption shall be 1.25 kg per kWh for Biomass Gasifier based power project.

39. Also, Regulation 50 of the RE Tariff Regulations, 2020 specifies that the normative specific fuel consumption shall be 3 kg of substrate mix per kWh for Biogas based power.

40. The Commission has considered the fuel mix for Biomass Gasifier based power project and Biogas based power projects as specified above.

***(b) <u>Calorific Value</u>***

41. The Commission has considered the calorific value for biomass fuel used as 3400 kcal/kg as per Regulation 41 of the RE Tariff Regulations,2020.

***(c) <u>Fuel Price</u>***

42. Regarding Biomass Fuel Price, Regulation 43 of the RE Tariff Regulations, 2020 stipulates as follows:

*"Biomass fuel price shall be Rs. 2,958.25/MT for FY 2020-21. This price shall be subject to revision prospectively during the course of the year through a separate order based on recommendation of the State Level Committee constituted by the Commission consisting of representatives of Nodal Agency, State Government, Distribution Licensee and any other organisation as decided by the Commission. The Committee shall recommend biomass fuel price once in every two years based on the fuel study*

*conducted by RRECL. The State Level Committee shall also recommend the annual escalation in the Biomass fuel price for the year immediately following the year for which the fuel price has been recommended by it based on the fuel study conducted by RRECL. Thereafter, the fuel cost including annual escalation would again be revisited by the Committee taking into account the prevailing market conditions, and the cycle would continue till the end of the Control Period:*

*Provided that the fuel cost arrived at as above shall be applicable to the Biomass power plants commissioned during the current Control Period (s) and also during the earlier Control Period FY 2009-15 and FY 2015-20. "*

43. Regarding Fuel Price for Biogas Power Project, Regulation 52 of the RE Tariff Regulations, 2020 stipulates as follows:

*"Feed stock price for the first year of the Control Period (i.e. FY 2020-21) shall be Rs 1273.06/MT (net of any cost recovery from digester effluent): Provided that for the years beyond 2020-21 of the Control Period, the biogas price for FY 2020-21 will change in the same proportion of change in Biomass fuel price determined based on the recommendations of the State Level Committee constituted under Regulation 43 of these Regulations unless specifically reviewed by the Commission."*

44. The Commission has considered bio-mass fuel price for FY 2020-21 as Rs. 2958.25/MT. As the State Level Committee is yet to submit its recommendations on the Biomass Price, the Commission at this stage has considered the Biomass Price for Biomass power projects and Feedstock price for FY 2020-21 as well as FY 2021-22 as specified for FY 2020-21 in RE Tariff Regulations, 2020 which shall be subject to revision based on the recommendations of the State Level Committee.

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

45. Regulation 24.1 of the RE Tariff Regulations, 2020 provides as under:
"*The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated or higher depreciation, if availed, for the purpose of tariff determination:"*

*"a) Assessment of benefit shall be based on normative capital cost, accelerated or higher depreciation rate as per relevant provisions under Income Tax Act and corporate income tax rate."*
*"b) Capitalization of renewable energy projects during second half of the*

*fiscal year."*

*"c) Per unit benefit shall be derived on levellised basis at discount factor determined as per Regulation 13 of these Regulations:"*

46. Capital subsidy provided by the Government as per prevailing scheme/policy has already been considered, while considering the capital cost of the project.

47. 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 as per the Regulations (4.67% p.a. for first 15 years and 2.00% for the remaining useful life) 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 extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (ii a) of the Income Tax Act.

48. Depreciation for both FY 2020-21 & FY 2021-22 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 24.1 of Regulation 24). 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 levellised 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.

**Tariff for Biomass Power Plants commissioned during FY 2009-15 and FY 2015-20:**

49. In terms of the provisions of the Regulation 43 of the RE Tariff Regulations 2020, the Biomass fuel price of Rs. 2958.25/MT is also applicable to the Biomass power plants commissioned during the earlier periods of FY 2009-15 and FY 2015-20. Hence, the variable charge determined under this Order for FY 2020-21 and FY 2021-22 shall also be applicable for the Biomass power plants commissioned during the earlier periods with fixed charges remaining the same as determined earlier through the respective tariff order(s) for the Biomass based power plants commissioned in the relevant year with other terms and conditions stipulated therein being applicable.

50. The tariff determined through this Order shall be in force from 1.04.2020 and 1.04.2021 for plants getting commissioned during FY 2020-21 and FY 2021-22. The variable cost determined for FY 2021-22 shall also remain applicable as interim till a further Order is issued in this respect. The Fixed charges determined for FY 2021-22 in this order shall also remain applicable for FY 2022-23 till the same are determined.

51. In the light of the discussion made in the preceding paragraphs, the generic tariffs of different RE projects for the financial year 2020-21 & FY 2021-22 have been arrived at and are approved as follows:

## GENERIC TARIFF FOR RE TECHNOLOGIES FOR FY 2020-21

52. The Generic Tariff for RE Technologies computed for FY 2020-21 is shown in Table below:

| State | Levellised Fixed Cost | Variable Cost (FY 2020-21) | Applicable Tariff Rates (FY 2020-21) | Benefit of Accelerated Depreciation (if availed) | Net tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed) |
|---|---|---|---|---|---|
| | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) |
| **Biomass Power Projects with Water Cooled Condenser and travelling grate boiler** | | | | | |
| Applicable Tariff | 2.41 | 4.06 | 6.47 | 0.12 | 6.35 |
| **Biomass Power Projects with Air Cooled Condenser and travelling grate boiler** | | | | | |
| Applicable Tariff | 2.61 | 4.15 | 6.76 | 0.13 | 6.63 |
| **Biomass Power Projects with Water Cooled Condenser and AFBC boiler** | | | | | |
| Applicable Tariff | 2.41 | 3.99 | 6.39 | 0.12 | 6.27 |
| **Biomass Power Projects with Air Cooled Condenser and AFBC boiler** | | | | | |
| Applicable Tariff | 2.60 | 4.08 | 6.68 | 0.13 | 6.55 |
| **Biomass Gasifier Power Project** | | | | | |
| Applicable Tariff | 2.46 | 4.11 | 6.57 | 0.09 | 6.48 |
| **Biogas Power Project** | | | | | |
| Applicable Tariff | 3.15 | 4.34 | 7.49 | 0.17 | 7.32 |

53. The Generic Tariff for RE Technologies computed for FY 2021-22 is shown in Table below:

| **State** | **Levellised Fixed Cost** | **Variable Cost (FY 2021-22)** | **Applicable Tariff Rates (FY 2021-22)** | **Benefit of Accelerated Depreciation (if availed)** | **Net tariff (upon adjusting for Accelerated Depreciation Benefit) (if availed)** |
|---|---|---|---|---|---|
| | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) | (Rs/kWh) |
| **Biomass Power Projects with Water Cooled Condenser and travelling grate boiler** | | | | | |
| Applicable Tariff | 2.45 | 4.06 | 6.51 | 0.12 | 6.39 |
| **Biomass Power Projects with Air Cooled Condenser and travelling grate boiler** | | | | | |
| Applicable Tariff | 2.65 | 4.15 | 6.81 | 0.13 | 6.68 |
| **Biomass Power Projects with Water Cooled Condenser and AFBC boiler** | | | | | |
| Applicable Tariff | 2.45 | 3.99 | 6.43 | 0.12 | 6.31 |
| **Biomass Power Projects with Air Cooled Condenser and AFBC boiler** | | | | | |
| Applicable Tariff | 2.65 | 4.08 | 6.73 | 0.13 | 6.60 |
| **Biomass Gasifier Power Project** | | | | | |
| Applicable Tariff | 2.52 | 4.11 | 6.62 | 0.09 | 6.53 |
| **Biogas Power Project** | | | | | |
| Applicable Tariff | 3.20 | 4.34 | 7.54 | 0.17 | 7.37 |

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

| **Sl. No.** | **Renewable Energy Projects** | **Annexure** |
|---|---|---|
| **FY 2020-21** | | |
| I | **Biomass Power Projects with Water Cooled Condenser and using Travelling Grate** | Annexure I |

| Sl. No. | Renewable Energy Projects | Annexure |
|---|---|---|
| II | **Biomass Power Projects with Water Cooled Condenser and using AFBC boiler** | Annexure II |
| III | **Biomass Power Projects with Air Cooled Condenser and using Travelling Grate boiler** | Annexure III |
| IV | **Biomass Power Projects with Air Cooled Condenser and using AFBC boiler** | Annexure IV |
| V | **Biomass Gasifier Power Projects** | Annexure V |
| VI | **Biogas Power Projects** | Annexure VI |
| **FY 2021-22** | | |
| VII | **Biomass Power Projects with Water Cooled Condenser and using Travelling Grate** | Annexure VII |
| VIII | **Biomass Power Projects with Water Cooled Condenser and using AFBC boiler** | Annexure VIII |
| IX | **Biomass Power Projects with Air Cooled Condenser and using Travelling Grate boiler** | Annexure IX |
| X | **Biomass Power Projects with Air Cooled Condenser and using AFBC boiler** | Annexure X |
| XI | **Biomass Gasifier Power Projects** | Annexure XI |
| XII | **Biogas Power Projects** | Annexure XII |

| Biomass Rankine Water Cooled Condenser with Travelling Grate Boiler Power Projects (FY 2020-21) | | | | | Annexure I |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 527.78 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 369.45 |
| | | | Total Equity Amount | Rs Lakh | 158.33 |
| | | Debt Component | Loan Amount | Rs Lakh | 369.45 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15.00 |
| | | | Interest Rate | % | 0.09 |
| | | Equity Component | Equity amount | Rs Lakh | 158.33 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| **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 | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 46.46 |

| | | | | | |
|---|---|---|---|---|---|
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation & Sale of Energy** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component : Biomass Rankine Cycle Based 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | 256.09 | 268.90 | 282.34 | 296.46 | 311.28 | 326.85 | 343.19 | 360.35 | 378.37 | 397.29 | 417.15 | 438.01 | 459.91 | 482.90 | 507.05 | 532.40 | 559.02 | 586.97 | 616.32 | 647.14 | 679.49 | 713.47 | 749.14 | 786.60 | 825.93 |

| 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 | | 46.46 | 48.24 | 50.09 | 52.02 | 54.01 | 56.08 | 58.24 | 60.47 | 62.79 | 65.20 | 67.70 | 70.30 | 73.00 | 75.80 | 78.71 | 81.73 | 84.86 | 88.12 | 91.50 | 95.01 | 98.66 | 102.44 | 106.37 | 110.45 | 114.69 |
| Depreciation | Rs Lakh | | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 |
| Interest on term loan | Rs Lakh | | 32.14 | 29.93 | 27.71 | 25.49 | 23.28 | 21.06 | 18.84 | 16.63 | 14.41 | 12.19 | 9.98 | 7.76 | 5.54 | 3.33 | 1.11 | 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 | | 14.87 | 15.51 | 16.18 | 16.89 | 17.63 | 18.41 | 19.23 | 20.09 | 20.99 | 21.94 | 22.94 | 23.99 | 25.09 | 26.24 | 27.45 | 28.56 | 29.93 | 31.36 | 32.86 | 34.44 | 36.09 | 37.82 | 39.64 | 41.55 | 43.55 |
| Return on Equity | Rs Lakh | | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 |
| **Total Fixed Cost** | **Rs Lakh** | | **144.96** | **145.16** | **145.47** | **145.88** | **146.40** | **147.04** | **147.79** | **148.67** | **149.68** | **150.82** | **152.11** | **153.53** | **155.11** | **156.85** | **158.76** | **147.71** | **152.21** | **156.89** | **161.78** | **166.86** | **172.16** | **177.68** | **183.43** | **189.42** | **195.66** |

**Levallised 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 | | 4.06 | 4.26 | 4.48 | 4.70 | 4.94 | 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 | 13.10 |
| O&M expn | Rs/kWh | **1.03** | 0.74 | 0.76 | 0.79 | 0.82 | 0.86 | 0.89 | 0.92 | 0.96 | 1.00 | 1.03 | 1.07 | 1.11 | 1.16 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.51 | 1.56 | 1.62 | 1.69 | 1.75 | 1.82 |
| Depreciation | Rs/kWh | **0.35** | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| Int. on term loan | Rs/kWh | **0.25** | 0.51 | 0.47 | 0.44 | 0.40 | 0.37 | 0.33 | 0.30 | 0.26 | 0.23 | 0.19 | 0.16 | 0.12 | 0.09 | 0.05 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.35** | 0.24 | 0.25 | 0.26 | 0.27 | 0.28 | 0.29 | 0.30 | 0.32 | 0.33 | 0.35 | 0.36 | 0.38 | 0.40 | 0.42 | 0.44 | 0.45 | 0.47 | 0.50 | 0.52 | 0.55 | 0.57 | 0.60 | 0.63 | 0.66 | 0.69 |
| RoE | Rs/kWh | **0.43** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| **Total COG** | **Rs/kWh** | **2.41** | **6.36** | **6.56** | **6.78** | **7.01** | **7.26** | **7.51** | **7.78** | **8.07** | **8.37** | **8.69** | **9.03** | **9.38** | **9.75** | **10.14** | **10.56** | **10.78** | **11.28** | **11.79** | **12.34** | **12.91** | **13.50** | **14.13** | **14.79** | **15.47** | **16.20** |

| | | |
|---|---|---|
| Variable Cost | **4.06** | Rs/Kwh |
| Levllised Tariff (Fixed) | 2.41 | Rs/Kwh |
| **Levellised Tariff** | **6.47** | Rs/Unit |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 527.78 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 12.32 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 158.33 | 184.72 | 73.89 | 44.33 | 26.60 | 15.96 | 9.58 | 5.75 | 3.45 | 2.07 | 1.24 | 0.74 | 0.45 | 0.27 | 0.16 | 0.10 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 146.01 | 160.08 | 49.24 | 19.69 | 1.95 | -8.69 | -15.07 | -18.90 | -21.20 | -22.58 | -23.41 | -23.90 | -24.20 | -24.38 | -24.49 | -11.67 | -11.70 | -11.73 | -11.74 | -11.75 | -11.75 | -11.76 | -11.76 | -11.76 | -11.76 |
| Tax Benefit | Rs Lakh | 51.02 | 55.94 | 17.21 | 6.88 | 0.68 | -3.04 | -5.27 | -6.61 | -7.41 | -7.89 | -8.18 | -8.35 | -8.46 | -8.52 | -8.56 | -4.08 | -4.09 | -4.10 | -4.10 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 |
| Energy generation | MU | 3.15 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 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 | 1.62 | 0.89 | 0.27 | 0.11 | 0.01 | -0.05 | -0.08 | -0.10 | -0.12 | -0.13 | -0.13 | -0.13 | -0.13 | -0.14 | -0.14 | -0.06 | -0.06 | -0.06 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.06 | Rs/Kwh |
| Electricity Generation (Levellised) | 6.04 | Rs/Kwh |
| **Levellised benefit** | **0.12** | Rs/Kwh |

| Biomass Rankine Water Cooled Condenser with AFBC Boiler Power Projects (FY 2020-21) | | | | | Annexure II |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| 1 | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stablization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stablization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| 2 | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 527.78 |
| 3 | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 369.45 |
| | | | Total Equity Amount | Rs Lakh | 158.33 |
| | | Debt Component | Loan Amount | Rs Lakh | 369.45 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15.00 |
| | | | Interest Rate | % | 0.09 |
| | | Equity Component | Equity amount | Rs Lakh | 158.33 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| 6 | **Fuel Related Assumptions** | Heat Rate | After stabilization period | Kcal/kWh | 4125.00 |
| | | | During stabilization period | Kcal/kWh | 4125.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| 7 | **O&M** | O&M Expenses | | Rs Lakh | 46.46 |
| | | O & M Expenses Esc. | | % | 3.84% |

| | | | | | |
|---|---|---|---|---|---|
| **8** | **Generation&Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component : Biomass Rankine Cycle Based 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | 251.52 | 264.10 | 277.30 | 291.17 | 305.73 | 321.01 | 337.06 | 353.92 | 371.61 | 390.19 | 409.70 | 430.19 | 451.70 | 474.28 | 497.99 | 522.89 | 549.04 | 576.49 | 605.31 | 635.58 | 667.36 | 700.73 | 735.76 | 772.55 | 811.18 |

| Fixed Cost | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O&M Expenses | Rs Lakh | | 46.46 | 48.24 | 50.09 | 52.02 | 54.01 | 56.08 | 58.24 | 60.47 | 62.79 | 65.20 | 67.70 | 70.30 | 73.00 | 75.80 | 78.71 | 81.73 | 84.86 | 88.12 | 91.50 | 95.01 | 98.66 | 102.44 | 106.37 | 110.45 | 114.69 |
| Depreciation | Rs Lakh | | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 |
| Interest on term loan | Rs Lakh | | 32.14 | 29.93 | 27.71 | 25.49 | 23.28 | 21.06 | 18.84 | 16.63 | 14.41 | 12.19 | 9.98 | 7.76 | 5.54 | 3.33 | 1.11 | 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 | | 14.65 | 15.28 | 15.94 | 16.64 | 17.37 | 18.14 | 18.94 | 19.79 | 20.68 | 21.61 | 22.59 | 23.62 | 24.71 | 25.84 | 27.03 | 28.12 | 29.47 | 30.87 | 32.35 | 33.90 | 35.53 | 37.23 | 39.02 | 40.90 | 42.87 |
| Return on Equity | Rs Lakh | | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 |
| **Total Fixed Cost** | **Rs Lakh** | | **144.74** | **144.94** | **145.24** | **145.64** | **146.15** | **146.77** | **147.51** | **148.37** | **149.37** | **150.49** | **151.76** | **153.17** | **154.73** | **156.45** | **158.34** | **147.26** | **151.74** | **156.41** | **161.27** | **166.33** | **171.60** | **177.09** | **182.81** | **188.77** | **194.97** |

**Levallised 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 | | 3.99 | 4.19 | 4.40 | 4.62 | 4.85 | 5.09 | 5.34 | 5.61 | 5.89 | 6.19 | 6.50 | 6.82 | 7.16 | 7.52 | 7.90 | 8.29 | 8.70 | 9.14 | 9.60 | 10.08 | 10.58 | 11.11 | 11.67 | 12.25 | 12.86 |
| O&M expn | Rs/kWh | **1.03** | 0.74 | 0.76 | 0.79 | 0.82 | 0.86 | 0.89 | 0.92 | 0.96 | 1.00 | 1.03 | 1.07 | 1.11 | 1.16 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.51 | 1.56 | 1.62 | 1.69 | 1.75 | 1.82 |
| Depreciation | Rs/kWh | **0.35** | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| Int. on term loan | Rs/kWh | **0.25** | 0.51 | 0.47 | 0.44 | 0.40 | 0.37 | 0.33 | 0.30 | 0.26 | 0.23 | 0.19 | 0.16 | 0.12 | 0.09 | 0.05 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.35** | 0.23 | 0.24 | 0.25 | 0.26 | 0.28 | 0.29 | 0.30 | 0.31 | 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 | 0.62 | 0.65 | 0.68 |
| RoE | Rs/kWh | **0.43** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| **Total COG** | **Rs/kWh** | **2.41** | **6.28** | **6.49** | **6.70** | **6.93** | **7.16** | **7.42** | **7.68** | **7.96** | **8.26** | **8.57** | **8.90** | **9.25** | **9.61** | **10.00** | **10.41** | **10.63** | **11.11** | **11.62** | **12.15** | **12.71** | **13.30** | **13.92** | **14.56** | **15.24** | **15.95** |

| | | |
|---|---|---|
| Variable Cost | **3.99** | Rs/Kwh |
| Levllised Tariff (Fixed) | 2.41 | Rs/Kwh |
| **Levellised Tariff** | **6.39** | Rs/Unit |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 527.78 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 12.32 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 158.33 | 184.72 | 73.89 | 44.33 | 26.60 | 15.96 | 9.58 | 5.75 | 3.45 | 2.07 | 1.24 | 0.74 | 0.45 | 0.27 | 0.16 | 0.10 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 146.01 | 160.08 | 49.24 | 19.69 | 1.95 | -8.69 | -15.07 | -18.90 | -21.20 | -22.58 | -23.41 | -23.90 | -24.20 | -24.38 | -24.49 | -11.67 | -11.70 | -11.73 | -11.74 | -11.75 | -11.75 | -11.76 | -11.76 | -11.76 | -11.76 |
| Tax Benefit | Rs Lakh | 51.02 | 55.94 | 17.21 | 6.88 | 0.68 | -3.04 | -5.27 | -6.61 | -7.41 | -7.89 | -8.18 | -8.35 | -8.46 | -8.52 | -8.56 | -4.08 | -4.09 | -4.10 | -4.10 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 |
| Energy generation | MU | 3.15 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 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 | 1.62 | 0.89 | 0.27 | 0.11 | 0.01 | -0.05 | -0.08 | -0.10 | -0.12 | -0.13 | -0.13 | -0.13 | -0.13 | -0.14 | -0.14 | -0.06 | -0.06 | -0.06 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.06 | Rs/Kwh |
| Electricity Generation (Levellised) | 6.04 | Rs/Kwh |
| **Levellised benefit** | **0.12** | Rs/Kwh |

| Biomass Rankine Air Cooled Condenser with Travelling Grate Boiler Power Projects (FY 2020-21) | | | | | Annexure III |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 12.00% |
| | | | Auxiliary Consumption after stabilisation | % | 12.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 561.98 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 393.39 |
| | | | Total Equity Amount | Rs Lakh | 168.59 |
| | | Debt Component | Loan Amount | Rs Lakh | 393.39 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15.00 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 168.59 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| **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 | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 49.53 |

| | | | | | |
|---|---|---|---|---|---|
| | | O & M Expenses Escalation | | % | 3.84% |
| 8 | **Generation & Sale of Energy** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component : Biomass Rankine Cycle Based 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | 256.09 | 268.90 | 282.34 | 296.46 | 311.28 | 326.85 | 343.19 | 360.35 | 378.37 | 397.29 | 417.15 | 438.01 | 459.91 | 482.90 | 507.05 | 532.40 | 559.02 | 586.97 | 616.32 | 647.14 | 679.49 | 713.47 | 749.14 | 786.60 | 825.93 |

| 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 | | 49.53 | 51.43 | 53.40 | 55.45 | 57.58 | 59.79 | 62.08 | 64.47 | 66.94 | 69.51 | 72.18 | 74.94 | 77.82 | 80.81 | 83.91 | 87.13 | 90.47 | 93.94 | 97.55 | 101.29 | 105.17 | 109.21 | 113.40 | 117.75 | 122.27 |
| Depreciation | Rs Lakh | | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 |
| Interest on term loan | Rs Lakh | | 34.22 | 31.86 | 29.50 | 27.14 | 24.78 | 22.42 | 20.06 | 17.70 | 15.34 | 12.98 | 10.62 | 8.26 | 5.90 | 3.54 | 1.18 | 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 | | 15.06 | 15.70 | 16.38 | 17.09 | 17.84 | 18.62 | 19.44 | 20.31 | 21.22 | 22.17 | 23.17 | 24.23 | 25.33 | 26.49 | 27.71 | 28.82 | 30.19 | 31.63 | 33.14 | 34.73 | 36.39 | 38.13 | 39.96 | 41.88 | 43.89 |
| Return on Equity | Rs Lakh | | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **153.64** | **153.83** | **154.11** | **154.51** | **155.03** | **155.66** | **156.42** | **157.30** | **158.33** | **159.49** | **160.80** | **162.26** | **163.88** | **165.67** | **167.63** | **155.78** | **160.50** | **165.41** | **170.53** | **175.86** | **181.41** | **187.18** | **193.20** | **199.47** | **206.00** |

**Levallised 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 | | 4.15 | 4.36 | 4.58 | 4.81 | 5.05 | 5.30 | 5.56 | 5.84 | 6.14 | 6.44 | 6.76 | 7.10 | 7.46 | 7.83 | 8.22 | 8.63 | 9.06 | 9.52 | 9.99 | 10.49 | 11.02 | 11.57 | 12.15 | 12.75 | 13.39 |
| O&M expn | Rs/kWh | **1.13** | 0.80 | 0.83 | 0.87 | 0.90 | 0.93 | 0.97 | 1.01 | 1.05 | 1.09 | 1.13 | 1.17 | 1.22 | 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 |
| Depreciation | Rs/kWh | **0.38** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 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 | **0.28** | 0.55 | 0.52 | 0.48 | 0.44 | 0.40 | 0.36 | 0.33 | 0.29 | 0.25 | 0.21 | 0.17 | 0.13 | 0.10 | 0.06 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.24 | 0.25 | 0.27 | 0.28 | 0.29 | 0.30 | 0.32 | 0.33 | 0.34 | 0.36 | 0.38 | 0.39 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.51 | 0.54 | 0.56 | 0.59 | 0.62 | 0.65 | 0.68 | 0.71 |
| RoE | Rs/kWh | **0.46** | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| **Total COG** | **Rs/kWh** | **2.61** | **6.64** | **6.85** | **7.08** | **7.31** | **7.56** | **7.82** | **8.10** | **8.39** | **8.70** | **9.03** | **9.37** | **9.73** | **10.11** | **10.52** | **10.94** | **11.16** | **11.67** | **12.20** | **12.76** | **13.35** | **13.96** | **14.60** | **15.28** | **15.99** | **16.73** |

| | | |
|---|---|---|
| Variable Cost | **4.15** | Rs/Kwh |
| Levllised Tariff (Fixed) | 2.61 | Rs/Kwh |
| **Levellised Tariff** | **6.76** | Rs/Unit |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 561.98 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 13.12 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 168.59 | 196.69 | 78.68 | 47.21 | 28.32 | 16.99 | 10.20 | 6.12 | 3.67 | 2.20 | 1.32 | 0.79 | 0.48 | 0.29 | 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 | 155.47 | 170.45 | 52.43 | 20.96 | 2.08 | -9.25 | -16.05 | -20.13 | -22.57 | -24.04 | -24.92 | -25.45 | -25.77 | -25.96 | -26.07 | -12.42 | -12.46 | -12.49 | -12.50 | -12.51 | -12.52 | -12.52 | -12.52 | -12.52 | -12.52 |
| Tax Benefit | Rs Lakh | 54.33 | 59.56 | 18.32 | 7.32 | 0.73 | -3.23 | -5.61 | -7.03 | -7.89 | -8.40 | -8.71 | -8.89 | -9.00 | -9.07 | -9.11 | -4.34 | -4.35 | -4.36 | -4.37 | -4.37 | -4.37 | -4.37 | -4.38 | -4.38 | -4.38 |
| Energy generation | MU | 3.08 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 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 | 1.76 | 0.97 | 0.30 | 0.12 | 0.01 | -0.05 | -0.09 | -0.11 | -0.13 | -0.14 | -0.14 | -0.14 | -0.15 | -0.15 | -0.15 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.52 | Rs/Kwh |
| Electricity Generation (Levellised) | 5.90 | Rs/Kwh |
| **Levellised benefit** | **0.13** | Rs/Kwh |

| Biomass Rankine Air Cooled Condenser with AFBC Boiler Power Projects (FY 2020-21) | | | | | Annexure IV |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 12.00% |
| | | | Auxiliary Consumption after stabilisation | % | 12.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 561.98 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 393.39 |
| | | | Total Equity Amount | Rs Lakh | 168.59 |
| | | Debt Component | Loan Amount | Rs Lakh | 393.39 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period (incld Moratorium) | years | 15.00 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 168.59 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| **6** | **Fuel Related Assumptions** | Heat Rate | After stabilization period | Kcal/kWh | 4125.00 |
| | | | During stabilization period | Kcal/kWh | 4125.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 49.53 |

| | | | | | |
|---|---|---|---|---|---|
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation & Sale of Energy** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component : Biomass Rankine Cycle Based 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | | 251.52 | 264.10 | 277.30 | 291.17 | 305.73 | 321.01 | 337.06 | 353.92 | 371.61 | 390.19 | 409.70 | 430.19 | 451.70 | 474.28 | 497.99 | 522.89 | 549.04 | 576.49 | 605.31 | 635.58 | 667.36 | 700.73 | 735.76 | 772.55 | 811.18 |

| Fixed Cost | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O&M Expenses | Rs Lakh | | 49.53 | 51.43 | 53.40 | 55.45 | 57.58 | 59.79 | 62.08 | 64.47 | 66.94 | 69.51 | 72.18 | 74.94 | 77.82 | 80.81 | 83.91 | 87.13 | 90.47 | 93.94 | 97.55 | 101.29 | 105.17 | 109.21 | 113.40 | 117.75 | 122.27 |
| Depreciation | Rs Lakh | | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 |
| Interest on term loan | Rs Lakh | | 34.22 | 31.86 | 29.50 | 27.14 | 24.78 | 22.42 | 20.06 | 17.70 | 15.34 | 12.98 | 10.62 | 8.26 | 5.90 | 3.54 | 1.18 | 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 | | 14.85 | 15.48 | 16.15 | 16.84 | 17.58 | 18.35 | 19.16 | 20.01 | 20.90 | 21.84 | 22.83 | 23.86 | 24.95 | 26.09 | 27.29 | 28.38 | 29.73 | 31.15 | 32.63 | 34.19 | 35.83 | 37.54 | 39.34 | 41.23 | 43.21 |
| Return on Equity | Rs Lakh | | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **153.43** | **153.60** | **153.88** | **154.27** | **154.77** | **155.39** | **156.13** | **157.00** | **158.01** | **159.16** | **160.45** | **161.90** | **163.50** | **165.27** | **167.21** | **155.34** | **160.04** | **164.93** | **170.02** | **175.32** | **180.84** | **186.59** | **192.58** | **198.82** | **205.32** |

**Levallised 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 | | 4.08 | 4.28 | 4.50 | 4.72 | 4.96 | 5.21 | 5.47 | 5.74 | 6.03 | 6.33 | 6.64 | 6.98 | 7.32 | 7.69 | 8.08 | 8.48 | 8.90 | 9.35 | 9.82 | 10.31 | 10.82 | 11.36 | 11.93 | 12.53 | 13.15 |
| O&M expn | Rs/kWh | **1.13** | 0.80 | 0.83 | 0.87 | 0.90 | 0.93 | 0.97 | 1.01 | 1.05 | 1.09 | 1.13 | 1.17 | 1.22 | 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 |
| Depreciation | Rs/kWh | **0.38** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 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 | **0.28** | 0.55 | 0.52 | 0.48 | 0.44 | 0.40 | 0.36 | 0.33 | 0.29 | 0.25 | 0.21 | 0.17 | 0.13 | 0.10 | 0.06 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.24 | 0.25 | 0.26 | 0.27 | 0.29 | 0.30 | 0.31 | 0.32 | 0.34 | 0.35 | 0.37 | 0.39 | 0.40 | 0.42 | 0.44 | 0.46 | 0.48 | 0.51 | 0.53 | 0.55 | 0.58 | 0.61 | 0.64 | 0.67 | 0.70 |
| RoE | Rs/kWh | **0.46** | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| **Total COG** | **Rs/kWh** | **2.60** | **6.57** | **6.77** | **6.99** | **7.22** | **7.47** | **7.72** | **8.00** | **8.28** | **8.59** | **8.91** | **9.25** | **9.60** | **9.98** | **10.37** | **10.79** | **11.00** | **11.50** | **12.02** | **12.57** | **13.15** | **13.75** | **14.39** | **15.05** | **15.75** | **16.48** |

| | | |
|---|---|---|
| Variable Cost | **4.08** | Rs/Kwh |
| Levllised Tariff (Fixed) | 2.60 | Rs/Kwh |
| **Levellised Tariff** | **6.68** | Rs/Unit |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 561.98 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 13.12 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 168.59 | 196.69 | 78.68 | 47.21 | 28.32 | 16.99 | 10.20 | 6.12 | 3.67 | 2.20 | 1.32 | 0.79 | 0.48 | 0.29 | 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 | 155.47 | 170.45 | 52.43 | 20.96 | 2.08 | -9.25 | -16.05 | -20.13 | -22.57 | -24.04 | -24.92 | -25.45 | -25.77 | -25.96 | -26.07 | -12.42 | -12.46 | -12.49 | -12.50 | -12.51 | -12.52 | -12.52 | -12.52 | -12.52 | -12.52 |
| Tax Benefit | Rs Lakh | 54.33 | 59.56 | 18.32 | 7.32 | 0.73 | -3.23 | -5.61 | -7.03 | -7.89 | -8.40 | -8.71 | -8.89 | -9.00 | -9.07 | -9.11 | -4.34 | -4.35 | -4.36 | -4.37 | -4.37 | -4.37 | -4.37 | -4.38 | -4.38 | -4.38 |
| Energy generation | MU | 3.08 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 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 | 1.76 | 0.97 | 0.30 | 0.12 | 0.01 | -0.05 | -0.09 | -0.11 | -0.13 | -0.14 | -0.14 | -0.14 | -0.15 | -0.15 | -0.15 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.52 | Rs/Kwh |
| Electricity Generation (Levellised) | 5.90 | Rs/Kwh |
| **Levellised benefit** | **0.13** | Rs/Kwh |

| **Biomass Gasifier Based Power Projects (FY 2020-21)** | | | | | **Annexure V** |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stabilization for 6 months) | % | 85.00% |
| | | | PLF(during first year after Stabilization) | % | 85.00% |
| | | | PLF(second year onwards) | % | 85.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 443.49 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 310.44 |
| | | | Total Equity Amount | Rs Lakh | 133.05 |
| | | Debt Component | Loan Amount | Rs Lakh | 310.44 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period (incld. Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 133.05 |
| | | | Return on Equity (upto 20 years) | % p.a. | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate (equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest on Working Capital | | % | 10.00% |
| **6** | **Fuel Related Assumptions** | Biomass | Specific Fuel Consumption | kg/kWh | 1.25 |
| | | | Base Price | Rs/MT | 2958.25 |
| | | | Escalation Factor for Working Capital | % | 5.00% |
| **7** | **Operation & Maintenance** | O&M Expenses | | Rs Lakh | 61.62 |
| | | O & M Expenses Escalation | | % | 3.84% |

| | | | | | |
|---|---|---|---|---|---|
| **8** | **Generation & Sale of Energy** | Total No .of Hours | | Hrs | 8760 |

**Determination of Tariff Component: Biomass Gasifier Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 |

| 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 | | 275.34 | 289.11 | 303.56 | 318.74 | 334.68 | 351.41 | 368.98 | 387.43 | 406.80 | 427.14 | 448.50 | 470.92 | 494.47 | 519.19 | 545.15 | 572.41 | 601.03 | 631.08 | 662.64 | 695.77 | 730.56 | 767.08 | 805.44 | 845.71 | 888.00 |

| 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 | | 61.62 | 63.98 | 66.44 | 68.99 | 71.64 | 74.38 | 77.24 | 80.20 | 83.28 | 86.48 | 89.79 | 93.24 | 96.82 | 100.53 | 104.39 | 108.39 | 112.55 | 116.87 | 121.36 | 126.01 | 130.85 | 135.87 | 141.08 | 146.49 | 152.12 |
| Depreciation | Rs Lakh | | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 |
| Interest on term loan | Rs Lakh | | 27.01 | 25.14 | 23.28 | 21.42 | 19.55 | 17.69 | 15.82 | 13.96 | 12.10 | 10.23 | 8.37 | 6.50 | 4.64 | 2.78 | 0.91 | - | - | - | - | - | - | - | - | - | - |
| Interest on working Capital | Rs Lakh | | 16.22 | 16.93 | 17.68 | 18.47 | 19.29 | 20.16 | 21.07 | 22.02 | 23.03 | 24.08 | 25.18 | 26.34 | 27.56 | 28.84 | 30.18 | 31.45 | 32.95 | 34.52 | 36.17 | 37.90 | 39.72 | 41.62 | 43.61 | 45.71 | 47.90 |
| Return on Equity | Rs Lakh | | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 |
| **Total Fixed Cost** | **Rs Lakh** | | **148.13** | **149.34** | **150.68** | **152.15** | **153.76** | **155.51** | **157.41** | **159.47** | **161.68** | **164.07** | **166.63** | **169.37** | **172.30** | **175.43** | **178.76** | **171.28** | **176.94** | **182.83** | **188.97** | **195.35** | **202.00** | **208.93** | **216.14** | **223.64** | **231.46** |

**Levallised 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 | **6.44** | 4.11 | 4.31 | 4.53 | 4.76 | 4.99 | 5.24 | 5.51 | 5.78 | 6.07 | 6.37 | 6.69 | 7.03 | 7.38 | 7.75 | 8.13 | 8.54 | 8.97 | 9.42 | 9.89 | 10.38 | 10.90 | 11.45 | 12.02 | 12.62 | 13.25 |
| O&M expn | Rs/kWh | **1.29** | 0.92 | 0.95 | 0.99 | 1.03 | 1.07 | 1.11 | 1.15 | 1.20 | 1.24 | 1.29 | 1.34 | 1.39 | 1.44 | 1.50 | 1.56 | 1.62 | 1.68 | 1.74 | 1.81 | 1.88 | 1.95 | 2.03 | 2.11 | 2.19 | 2.27 |
| Depreciation | Rs/kWh | **0.28** | 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** | 0.40 | 0.38 | 0.35 | 0.32 | 0.29 | 0.26 | 0.24 | 0.21 | 0.18 | 0.15 | 0.12 | 0.10 | 0.07 | 0.04 | 0.01 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.24 | 0.25 | 0.26 | 0.28 | 0.29 | 0.30 | 0.31 | 0.33 | 0.34 | 0.36 | 0.38 | 0.39 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.52 | 0.54 | 0.57 | 0.59 | 0.62 | 0.65 | 0.68 | 0.71 |
| 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** | **8.91** | **6.32** | **6.54** | **6.78** | **7.03** | **7.29** | **7.56** | **7.85** | **8.16** | **8.48** | **8.82** | **9.18** | **9.55** | **9.95** | **10.37** | **10.80** | **11.10** | **11.61** | **12.15** | **12.71** | **13.30** | **13.92** | **14.56** | **15.24** | **15.96** | **16.70** |

| | | |
|---|---|---|
| Variable Cost | **4.11** | Rs/Kwh |
| Levllised Tariff (Fixed) | 2.46 | Rs/Kwh |
| **Levellised Tariff** | **6.57** | **Rs/Kwh** |

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

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 443.49 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 10.36 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 133.05 | 155.22 | 62.09 | 37.25 | 22.35 | 13.41 | 8.05 | 4.83 | 2.90 | 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 | 122.69 | 134.51 | 41.38 | 16.54 | 1.64 | -7.30 | -12.66 | -15.88 | -17.81 | -18.97 | -19.67 | -20.09 | -20.34 | -20.49 | -20.58 | -9.80 | -9.83 | -9.85 | -9.87 | -9.87 | -9.88 | -9.88 | -9.88 | -9.88 | -9.88 |
| Tax Benefit | Rs Lakh | 42.87 | 47.00 | 14.46 | 5.78 | 0.57 | -2.55 | -4.43 | -5.55 | -6.22 | -6.63 | -6.87 | -7.02 | -7.11 | -7.16 | -7.19 | -3.43 | -3.44 | -3.44 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 |
| Energy generation | MU | 3.35 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 |
| Per unit benefit | Rs/Unit | 1.28 | 0.70 | 0.22 | 0.09 | 0.01 | -0.04 | -0.07 | -0.08 | -0.09 | -0.10 | -0.10 | -0.10 | -0.11 | -0.11 | -0.11 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 5.93 | **Rs/Unit** |
| Electricity Generation (Levellised) | 6.41 | **Rs/Unit** |
| **Levellised benefit** | **0.09** | **Rs/Unit** |

| Biogas Based Power Projects (FY 2020-21) | | | | | Annexure VI |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption | % | 12.00% |
| | | | PLF | % | 90.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 856.77 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 599.74 |
| | | | Total Equity Amount | Rs Lakh | 257.03 |
| | | Debt Component | Loan Amount | Rs Lakh | 599.74 |
| | | | Moratorium Period | years | 0.00 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 257.03 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | |
| | | Interest On Working Capital | | % | |
| **6** | **Fuel Related Assumptions** | Biogas | Specific Fuel Consumption | kg/kWh | 3 |
| | | | Biogas Price | Rs/MT | 1273.06 |
| | | _ | Escalation Factor for Working Capital | % | 5.00% |
| **7** | **Operation & Maintenance** | O&M Expenses | | Rs Lakh | 61.62 |
| | | O & M Expenses Escalation | | % | 3.84% |

| | | | | | |
|---|---|---|---|---|---|
| **8** | **Generation & Sale of Energy** | Total No .Of Hours | | Hrs | 8760 |

**Determination of Tariff Component: Biogas Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 301.10 | 316.16 | 331.97 | 348.57 | 365.99 | 384.29 | 403.51 | 423.68 | 444.87 | 467.11 | 490.47 | 514.99 | 540.74 | 567.78 | 596.17 | 625.97 | 657.27 | 690.14 | 724.64 | 760.88 | 798.92 | 838.86 | 880.81 | 924.85 | 971.09 |

| 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 | | 61.62 | 63.98 | 66.44 | 68.99 | 71.64 | 74.38 | 77.24 | 80.20 | 83.28 | 86.48 | 89.79 | 93.24 | 96.82 | 100.53 | 104.39 | 108.39 | 112.55 | 116.87 | 121.36 | 126.01 | 130.85 | 135.87 | 141.08 | 146.49 | 152.12 |
| Depreciation | Rs Lakh | | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 |
| Interest on term loan | Rs Lakh | | 52.18 | 48.58 | 44.98 | 41.38 | 37.78 | 34.19 | 30.59 | 26.99 | 23.39 | 19.79 | 16.19 | 12.59 | 9.00 | 5.40 | 1.80 | - | - | - | - | - | - | - | - | - | - |
| Interest on working Capital | Rs Lakh | | 18.24 | 18.99 | 19.78 | 20.61 | 21.49 | 22.40 | 23.37 | 24.38 | 25.45 | 26.56 | 27.74 | 28.98 | 30.27 | 31.64 | 33.07 | 34.30 | 35.93 | 37.63 | 39.42 | 41.29 | 43.26 | 45.32 | 47.48 | 49.75 | 52.13 |
| Return on Equity | Rs Lakh | | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **215.62** | **215.14** | **214.79** | **214.57** | **214.49** | **214.56** | **214.78** | **215.16** | **215.70** | **216.42** | **217.31** | **218.39** | **219.67** | **221.15** | **222.84** | **203.44** | **209.22** | **215.24** | **221.51** | **228.04** | **234.85** | **241.93** | **249.30** | **256.98** | **264.98** |

**Levallised 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 | | 4.34 | 4.56 | 4.78 | 5.02 | 5.28 | 5.54 | 5.82 | 6.11 | 6.41 | 6.73 | 7.07 | 7.42 | 7.79 | 8.18 | 8.59 | 9.02 | 9.47 | 9.95 | 10.44 | 10.97 | 11.52 | 12.09 | 12.70 | 13.33 | 14.00 |
| O&M expn | Rs/kWh | **1.24** | 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 | 2.03 | 2.11 | 2.19 |
| Depreciation | Rs/kWh | **0.51** | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Int. on term loan | Rs/kWh | **0.38** | 0.75 | 0.70 | 0.65 | 0.60 | 0.54 | 0.49 | 0.44 | 0.39 | 0.34 | 0.29 | 0.23 | 0.18 | 0.13 | 0.08 | 0.03 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.39** | 0.26 | 0.27 | 0.29 | 0.30 | 0.31 | 0.32 | 0.34 | 0.35 | 0.37 | 0.38 | 0.40 | 0.42 | 0.44 | 0.46 | 0.48 | 0.49 | 0.52 | 0.54 | 0.57 | 0.60 | 0.62 | 0.65 | 0.68 | 0.72 | 0.75 |
| RoE | Rs/kWh | **0.63** | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| **Total COG** | **Rs/kWh** | **3.15** | **7.45** | **7.66** | **7.88** | **8.12** | **8.37** | **8.63** | **8.91** | **9.21** | **9.52** | **9.85** | **10.20** | **10.57** | **10.96** | **11.37** | **11.80** | **11.95** | **12.49** | **13.05** | **13.64** | **14.25** | **14.90** | **15.58** | **16.29** | **17.03** | **17.82** |

| | | |
|---|---|---|
| Variable Cost | **4.34** | Rs/Kwh |
| Levllised Tariff (Fixed) | 3.15 | Rs/Kwh |
| **Levellised Tariff** | **7.49** | **Rs/Kwh** |

**Determination of Additional Depreciation for Small Hydro Power Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 856.77 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 20.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 257.03 | 299.87 | 119.95 | 71.97 | 43.18 | 25.91 | 15.55 | 9.33 | 5.60 | 3.36 | 2.01 | 1.21 | 0.73 | 0.44 | 0.26 | 0.16 | 0.09 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 237.03 | 259.86 | 79.94 | 31.96 | 3.17 | -14.10 | -24.47 | -30.68 | -34.41 | -36.65 | -38.00 | -38.80 | -39.29 | -39.58 | -39.75 | -18.94 | -19.00 | -19.04 | -19.06 | -19.07 | -19.08 | -19.09 | -19.09 | -19.09 | -19.09 |
| Tax Benefit | Rs Lakh | 82.83 | 90.80 | 27.93 | 11.17 | 1.11 | -4.93 | -8.55 | -10.72 | -12.03 | -12.81 | -13.28 | -13.56 | -13.73 | -13.83 | -13.89 | -6.62 | -6.64 | -6.65 | -6.66 | -6.66 | -6.67 | -6.67 | -6.67 | -6.67 | -6.67 |
| 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 | 2.39 | 1.31 | 0.40 | 0.16 | 0.02 | -0.07 | -0.12 | -0.15 | -0.17 | -0.18 | -0.19 | -0.20 | -0.20 | -0.20 | -0.20 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 11.46 | **Rs/Unit** |
| Electricity Generation (Levellised) | 6.64 | **Rs/Unit** |
| **Levellised benefit** | **0.17** | **Rs/Unit** |

| Biomass Rankine Based Projects with water cooled condenser and Travelling Grate Boiler (FY 2021-22) | | | | | Annexure VII |
|---|---|---|---|---|---|
| S. No. | Assumption Head | Sub-Head | Sub-Head (2) | Unit | Assumptions |
| 1 | **Power Gen** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| 2 | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 527.78 |
| 3 | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 369.45 |
| | | | Total Equity Amount | Rs Lakh | 158.33 |
| | | Debt Component | Loan Amount | Rs Lakh | 369.45 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 158.33 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| 4 | **Financial Assu.** | 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| 6 | **Fuel Related Assu** | Heat Rate | After stabilization period | Kcal/kWh | 4200.00 |
| | | | During stabilization period | Kcal/kWh | 4200.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| 7 | **O&M** | O&M Expenses | | Rs Lakh | 48.24 |

| | | | | | |
|---|---|---|---|---|---|
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation&Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component: Biomass Rankine Cycle Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 256.09 | 268.90 | 282.34 | 296.46 | 311.28 | 326.85 | 343.19 | 360.35 | 378.37 | 397.29 | 417.15 | 438.01 | 459.91 | 482.90 | 507.05 | 532.40 | 559.02 | 586.97 | 616.32 | 647.14 | 679.49 | 713.47 | 749.14 | 786.60 | 825.93 |

| 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 | | 48.24 | 50.10 | 52.02 | 54.01 | 56.09 | 58.24 | 60.47 | 62.79 | 65.20 | 67.70 | 70.30 | 73.00 | 75.80 | 78.71 | 81.73 | 84.86 | 88.12 | 91.50 | 95.01 | 98.66 | 102.44 | 106.37 | 110.46 | 114.69 | 119.10 |
| Depreciation | Rs Lakh | | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 |
| Interest on term loan | Rs Lakh | | 32.14 | 29.93 | 27.71 | 25.49 | 23.28 | 21.06 | 18.84 | 16.63 | 14.41 | 12.19 | 9.98 | 7.76 | 5.54 | 3.33 | 1.11 | 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 | | 14.94 | 15.58 | 16.26 | 16.97 | 17.71 | 18.50 | 19.32 | 20.18 | 21.09 | 22.05 | 23.05 | 24.10 | 25.20 | 26.36 | 27.58 | 28.69 | 30.06 | 31.50 | 33.01 | 34.59 | 36.25 | 37.99 | 39.81 | 41.73 | 43.73 |
| Return on Equity | Rs Lakh | | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 |
| **Total Fixed Cost** | **Rs Lakh** | | **146.82** | **147.09** | **147.47** | **147.96** | **148.56** | **149.28** | **150.12** | **151.09** | **152.19** | **153.43** | **154.81** | **156.34** | **158.03** | **159.88** | **161.91** | **150.97** | **155.60** | **160.42** | **165.44** | **170.66** | **176.11** | **181.78** | **187.68** | **193.83** | **200.24** |

**Levallised 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 | **6.37** | 4.06 | 4.26 | 4.48 | 4.70 | 4.94 | 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 | 13.10 |
| O&M expn | Rs/kWh | **1.07** | 0.76 | 0.79 | 0.82 | 0.86 | 0.89 | 0.92 | 0.96 | 1.00 | 1.03 | 1.07 | 1.11 | 1.16 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.51 | 1.56 | 1.62 | 1.69 | 1.75 | 1.82 | 1.89 |
| Depreciation | Rs/kWh | **0.35** | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| Int. on term loan | Rs/kWh | **0.25** | 0.51 | 0.47 | 0.44 | 0.40 | 0.37 | 0.33 | 0.30 | 0.26 | 0.23 | 0.19 | 0.16 | 0.12 | 0.09 | 0.05 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.35** | 0.24 | 0.25 | 0.26 | 0.27 | 0.28 | 0.29 | 0.31 | 0.32 | 0.33 | 0.35 | 0.37 | 0.38 | 0.40 | 0.42 | 0.44 | 0.45 | 0.48 | 0.50 | 0.52 | 0.55 | 0.57 | 0.60 | 0.63 | 0.66 | 0.69 |
| RoE | Rs/kWh | **0.43** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| **Total COG** | **Rs/kWh** | **8.82** | **6.39** | **6.60** | **6.81** | **7.05** | **7.29** | **7.55** | **7.82** | **8.11** | **8.41** | **8.73** | **9.07** | **9.42** | **9.80** | **10.19** | **10.61** | **10.83** | **11.33** | **11.85** | **12.39** | **12.97** | **13.57** | **14.19** | **14.85** | **15.54** | **16.27** |

| | | |
|---|---|---|
| Variable Cost | **4.06** | Rs/kWh |
| Levllised Tariff (Fixed) | 2.45 | Rs/kWh |
| **Levellised Tariff** | **6.51** | **Rs/kWh** |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 527.78 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 12.32 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 158.33 | 184.72 | 73.89 | 44.33 | 26.60 | 15.96 | 9.58 | 5.75 | 3.45 | 2.07 | 1.24 | 0.74 | 0.45 | 0.27 | 0.16 | 0.10 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 146.01 | 160.08 | 49.24 | 19.69 | 1.95 | -8.69 | -15.07 | -18.90 | -21.20 | -22.58 | -23.41 | -23.90 | -24.20 | -24.38 | -24.49 | -11.67 | -11.70 | -11.73 | -11.74 | -11.75 | -11.75 | -11.76 | -11.76 | -11.76 | -11.76 |
| Tax Benefit | Rs Lakh | 51.02 | 55.94 | 17.21 | 6.88 | 0.68 | -3.04 | -5.27 | -6.61 | -7.41 | -7.89 | -8.18 | -8.35 | -8.46 | -8.52 | -8.56 | -4.08 | -4.09 | -4.10 | -4.10 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 |
| Energy generation | MU | 3.15 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 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 | 1.62 | 0.89 | 0.27 | 0.11 | 0.01 | -0.05 | -0.08 | -0.10 | -0.12 | -0.13 | -0.13 | -0.13 | -0.13 | -0.14 | -0.14 | -0.06 | -0.06 | -0.06 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.06 | Rs/Kwh |
| Electricity Generation (Levellised) | 6.04 | Rs/Kwh |
| **Levellised benefit** | **0.12** | **Rs/Kwh** |

| **Biomass Rankine Based Projects with water cooled condenser and AFBC Boiler (FY 2021-22)** | | | | | **Annexure VIII** |
|---|---|---|---|---|---|
| **S. No.** | **Assum. Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Gen** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 527.78 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 369.45 |
| | | | Total Equity Amount | Rs Lakh | 158.33 |
| | | Debt Component | Loan Amount | Rs Lakh | 369.45 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 158.33 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **4** | **Financial Assu.** | 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| **6** | **Fuel Related Ass.** | Heat Rate | After stabilization period | Kcal/kWh | 4125.00 |
| | | | During stabilization period | Kcal/kWh | 4125.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |
| **7** | **O & M** | O&M Expenses | | Rs Lakh | 48.24 |
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation&Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component: Biomass Rankine Cycle Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 251.52 | 264.10 | 277.30 | 291.17 | 305.73 | 321.01 | 337.06 | 353.92 | 371.61 | 390.19 | 409.70 | 430.19 | 451.70 | 474.28 | 497.99 | 522.89 | 549.04 | 576.49 | 605.31 | 635.58 | 667.36 | 700.73 | 735.76 | 772.55 | 811.18 |

| Fixed Cost | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O&M Expenses | Rs Lakh | | 48.24 | 50.10 | 52.02 | 54.01 | 56.09 | 58.24 | 60.47 | 62.79 | 65.20 | 67.70 | 70.30 | 73.00 | 75.80 | 78.71 | 81.73 | 84.86 | 88.12 | 91.50 | 95.01 | 98.66 | 102.44 | 106.37 | 110.46 | 114.69 | 119.10 |
| Depreciation | Rs Lakh | | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 24.63 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 | 10.56 |
| Interest on term loan | Rs Lakh | | 32.14 | 29.93 | 27.71 | 25.49 | 23.28 | 21.06 | 18.84 | 16.63 | 14.41 | 12.19 | 9.98 | 7.76 | 5.54 | 3.33 | 1.11 | 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 | | 14.73 | 15.36 | 16.02 | 16.72 | 17.46 | 18.23 | 19.04 | 19.89 | 20.78 | 21.72 | 22.70 | 23.73 | 24.82 | 25.96 | 27.16 | 28.25 | 29.60 | 31.01 | 32.50 | 34.05 | 35.68 | 37.40 | 39.19 | 41.07 | 43.05 |
| Return on Equity | Rs Lakh | | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 | 26.86 |
| **Total Fixed Cost** | **Rs Lakh** | | **146.60** | **146.87** | **147.24** | **147.72** | **148.31** | **149.01** | **149.84** | **150.79** | **151.88** | **153.10** | **154.47** | **155.98** | **157.65** | **159.48** | **161.49** | **150.53** | **155.14** | **159.93** | **164.93** | **170.13** | **175.54** | **181.19** | **187.06** | **193.18** | **199.56** |

**Levallised 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 | **6.26** | 3.99 | 4.19 | 4.40 | 4.62 | 4.85 | 5.09 | 5.34 | 5.61 | 5.89 | 6.19 | 6.50 | 6.82 | 7.16 | 7.52 | 7.90 | 8.29 | 8.70 | 9.14 | 9.60 | 10.08 | 10.58 | 11.11 | 11.67 | 12.25 | 12.86 |
| O&M expn | Rs/kWh | **1.07** | 0.76 | 0.79 | 0.82 | 0.86 | 0.89 | 0.92 | 0.96 | 1.00 | 1.03 | 1.07 | 1.11 | 1.16 | 1.20 | 1.25 | 1.30 | 1.35 | 1.40 | 1.45 | 1.51 | 1.56 | 1.62 | 1.69 | 1.75 | 1.82 | 1.89 |
| Depreciation | Rs/kWh | **0.35** | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.39 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 | 0.17 |
| Int. on term loan | Rs/kWh | **0.25** | 0.51 | 0.47 | 0.44 | 0.40 | 0.37 | 0.33 | 0.30 | 0.26 | 0.23 | 0.19 | 0.16 | 0.12 | 0.09 | 0.05 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.35** | 0.23 | 0.24 | 0.25 | 0.27 | 0.28 | 0.29 | 0.30 | 0.32 | 0.33 | 0.34 | 0.36 | 0.38 | 0.39 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.52 | 0.54 | 0.57 | 0.59 | 0.62 | 0.65 | 0.68 |
| RoE | Rs/kWh | **0.43** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 |
| **Total COG** | **Rs/kWh** | **8.70** | **6.31** | **6.52** | **6.73** | **6.96** | **7.20** | **7.45** | **7.72** | **8.00** | **8.30** | **8.61** | **8.94** | **9.29** | **9.66** | **10.05** | **10.46** | **10.68** | **11.16** | **11.68** | **12.21** | **12.77** | **13.36** | **13.98** | **14.63** | **15.31** | **16.03** |

| | | |
|---|---|---|
| Variable Cost | **3.99** | Rs/kWh |
| Levllised Tariff (Fixed) | 2.45 | Rs/kWh |
| **Levellised Tariff** | **6.43** | **Rs/kWh** |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 527.78 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 12.32 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 24.65 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 | 11.76 |

| 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% |
| Accelrated Deprn. | Rs Lakh | 158.33 | 184.72 | 73.89 | 44.33 | 26.60 | 15.96 | 9.58 | 5.75 | 3.45 | 2.07 | 1.24 | 0.74 | 0.45 | 0.27 | 0.16 | 0.10 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 146.01 | 160.08 | 49.24 | 19.69 | 1.95 | -8.69 | -15.07 | -18.90 | -21.20 | -22.58 | -23.41 | -23.90 | -24.20 | -24.38 | -24.49 | -11.67 | -11.70 | -11.73 | -11.74 | -11.75 | -11.75 | -11.76 | -11.76 | -11.76 | -11.76 |
| Tax Benefit | Rs Lakh | 51.02 | 55.94 | 17.21 | 6.88 | 0.68 | -3.04 | -5.27 | -6.61 | -7.41 | -7.89 | -8.18 | -8.35 | -8.46 | -8.52 | -8.56 | -4.08 | -4.09 | -4.10 | -4.10 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 | -4.11 |
| Energy generation | MU | 3.15 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 6.31 | 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 | 1.62 | 0.89 | 0.27 | 0.11 | 0.01 | -0.05 | -0.08 | -0.10 | -0.12 | -0.13 | -0.13 | -0.13 | -0.13 | -0.14 | -0.14 | -0.06 | -0.06 | -0.06 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.06 | Rs/Kwh |
| Electricity Generation (Levellised) | 6.04 | Rs/Kwh |
| **Levellised benefit** | **0.12** | **Rs/Kwh** |

| Biomass Rankine Based Projects with air cooled condenser and Travelling Grate Boiler (FY 2021-22) | | | | | Annexure IX |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| 1 | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 12.00% |
| | | | Auxiliary Consumption after stabilisation | % | 12.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| 2 | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 561.98 |
| 3 | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 393.39 |
| | | | Total Equity Amount | Rs Lakh | 168.59 |
| | | Debt Component | Loan Amount | Rs Lakh | 393.39 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 168.59 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| 4 | **Financial Assu.** | 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| 6 | **Fuel Related Ass.** | Heat Rate | After stabilization period | Kcal/kWh | 4200.00 |
| | | | During stabilization period | Kcal/kWh | 4200.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |

| | | | | | |
|---|---|---|---|---|---|
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 51.43 |
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation & Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component: Biomass Rankine Cycle Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 256.09 | 268.90 | 282.34 | 296.46 | 311.28 | 326.85 | 343.19 | 360.35 | 378.37 | 397.29 | 417.15 | 438.01 | 459.91 | 482.90 | 507.05 | 532.40 | 559.02 | 586.97 | 616.32 | 647.14 | 679.49 | 713.47 | 749.14 | 786.60 | 825.93 |

| 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 | | 51.43 | 53.41 | 55.45 | 57.58 | 59.79 | 62.09 | 64.47 | 66.94 | 69.51 | 72.18 | 74.95 | 77.82 | 80.81 | 83.91 | 87.13 | 90.47 | 93.94 | 97.55 | 101.29 | 105.18 | 109.21 | 113.40 | 117.76 | 122.27 | 126.97 |
| Depreciation | Rs Lakh | | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 |
| Interest on term loan | Rs Lakh | | 34.22 | 31.86 | 29.50 | 27.14 | 24.78 | 22.42 | 20.06 | 17.70 | 15.34 | 12.98 | 10.62 | 8.26 | 5.90 | 3.54 | 1.18 | 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 | | 15.14 | 15.79 | 16.47 | 17.18 | 17.93 | 18.72 | 19.54 | 20.41 | 21.32 | 22.28 | 23.29 | 24.35 | 25.46 | 26.62 | 27.85 | 28.96 | 30.34 | 31.78 | 33.30 | 34.89 | 36.56 | 38.31 | 40.14 | 42.07 | 44.09 |
| Return on Equity | Rs Lakh | | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **155.62** | **155.88** | **156.25** | **156.73** | **157.33** | **158.05** | **158.90** | **159.88** | **161.00** | **162.27** | **163.68** | **165.26** | **166.99** | **168.90** | **170.98** | **159.27** | **164.12** | **169.17** | **174.43** | **179.91** | **185.61** | **191.55** | **197.74** | **204.18** | **210.89** |

**Levallised 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 | **6.51** | 4.15 | 4.36 | 4.58 | 4.81 | 5.05 | 5.30 | 5.56 | 5.84 | 6.14 | 6.44 | 6.76 | 7.10 | 7.46 | 7.83 | 8.22 | 8.63 | 9.06 | 9.52 | 9.99 | 10.49 | 11.02 | 11.57 | 12.15 | 12.75 | 13.39 |
| O&M expn | Rs/kWh | **1.17** | 0.83 | 0.87 | 0.90 | 0.93 | 0.97 | 1.01 | 1.05 | 1.09 | 1.13 | 1.17 | 1.22 | 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 |
| Depreciation | Rs/kWh | **0.38** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 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 | **0.28** | 0.55 | 0.52 | 0.48 | 0.44 | 0.40 | 0.36 | 0.33 | 0.29 | 0.25 | 0.21 | 0.17 | 0.13 | 0.10 | 0.06 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.25 | 0.26 | 0.27 | 0.28 | 0.29 | 0.30 | 0.32 | 0.33 | 0.35 | 0.36 | 0.38 | 0.39 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.52 | 0.54 | 0.57 | 0.59 | 0.62 | 0.65 | 0.68 | 0.71 |
| RoE | Rs/kWh | **0.46** | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| **Total COG** | **Rs/kWh** | **9.17** | **6.68** | **6.89** | **7.11** | **7.35** | **7.60** | **7.86** | **8.14** | **8.44** | **8.75** | **9.07** | **9.42** | **9.78** | **10.17** | **10.57** | **10.99** | **11.22** | **11.73** | **12.26** | **12.82** | **13.41** | **14.03** | **14.68** | **15.35** | **16.07** | **16.81** |

| | | |
|---|---|---|
| Variable Cost | **4.15** | Rs/kWh |
| Levllised Tariff (Fixed) | 2.65 | Rs/kWh |
| **Levellised Tariff** | **6.81** | **Rs/kWh** |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 561.98 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 13.12 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 |

| **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% |
| Accelrated Deprn. | Rs Lakh | 168.59 | 196.69 | 78.68 | 47.21 | 28.32 | 16.99 | 10.20 | 6.12 | 3.67 | 2.20 | 1.32 | 0.79 | 0.48 | 0.29 | 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 | 155.47 | 170.45 | 52.43 | 20.96 | 2.08 | -9.25 | -16.05 | -20.13 | -22.57 | -24.04 | -24.92 | -25.45 | -25.77 | -25.96 | -26.07 | -12.42 | -12.46 | -12.49 | -12.50 | -12.51 | -12.52 | -12.52 | -12.52 | -12.52 | -12.52 |
| Tax Benefit | Rs Lakh | 54.33 | 59.56 | 18.32 | 7.32 | 0.73 | -3.23 | -5.61 | -7.03 | -7.89 | -8.40 | -8.71 | -8.89 | -9.00 | -9.07 | -9.11 | -4.34 | -4.35 | -4.36 | -4.37 | -4.37 | -4.37 | -4.37 | -4.38 | -4.38 | -4.38 |
| Energy generation | MU | 3.08 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 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 | 1.76 | 0.97 | 0.30 | 0.12 | 0.01 | -0.05 | -0.09 | -0.11 | -0.13 | -0.14 | -0.14 | -0.14 | -0.15 | -0.15 | -0.15 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.52 | Rs/Kwh |
| Electricity Generation (Levellised) | 5.90 | Rs/Kwh |
| **Levellised benefit** | **0.13** | **Rs/Kwh** |

| Biomass Rankine Based Projects with air cooled condenser and AFBC Boiler (FY 2021-22) | | | | | Annexure X |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| 1 | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 12.00% |
| | | | Auxiliary Consumption after stabilisation | % | 12.00% |
| | | | PLF(Stabilization for 6 months) | % | 80.00% |
| | | | PLF(during first year after Stabilization) | % | 80.00% |
| | | | PLF(second year onwards) | % | 80.00% |
| | | | Useful Life | Years | 25 |
| 2 | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 561.98 |
| 3 | **Financial Ass.** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 393.39 |
| | | | Total Equity Amount | Rs Lakh | 168.59 |
| | | Debt Component | Loan Amount | Rs Lakh | 393.39 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 168.59 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| 6 | **Fuel Related Ass.** | Heat Rate | After stabilization period | Kcal/kWh | 4125.00 |
| | | | During stabilization period | Kcal/kWh | 4125.00 |
| | | Biomass | Base Price | Rs/T | 2958.25 |
| | | | GCV-Biomass | Kcal/kg | 3400.00 |
| | | | Price Escalation for Working capital | % | 5.00% |

| | | | | | |
|---|---|---|---|---|---|
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 51.43 |
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation & Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component: Biomass Rankine Cycle Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 251.52 | 264.10 | 277.30 | 291.17 | 305.73 | 321.01 | 337.06 | 353.92 | 371.61 | 390.19 | 409.70 | 430.19 | 451.70 | 474.28 | 497.99 | 522.89 | 549.04 | 576.49 | 605.31 | 635.58 | 667.36 | 700.73 | 735.76 | 772.55 | 811.18 |

| Fixed Cost | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O&M Expenses | Rs Lakh | | 51.43 | 53.41 | 55.45 | 57.58 | 59.79 | 62.09 | 64.47 | 66.94 | 69.51 | 72.18 | 74.95 | 77.82 | 80.81 | 83.91 | 87.13 | 90.47 | 93.94 | 97.55 | 101.29 | 105.18 | 109.21 | 113.40 | 117.76 | 122.27 | 126.97 |
| Depreciation | Rs Lakh | | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 26.23 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 | 11.24 |
| Interest on term loan | Rs Lakh | | 34.22 | 31.86 | 29.50 | 27.14 | 24.78 | 22.42 | 20.06 | 17.70 | 15.34 | 12.98 | 10.62 | 8.26 | 5.90 | 3.54 | 1.18 | 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 | | 14.93 | 15.56 | 16.23 | 16.93 | 17.67 | 18.44 | 19.26 | 20.11 | 21.01 | 21.95 | 22.94 | 23.98 | 25.07 | 26.22 | 27.43 | 28.51 | 29.87 | 31.29 | 32.79 | 34.35 | 35.99 | 37.72 | 39.52 | 41.42 | 43.40 |
| Return on Equity | Rs Lakh | | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 | 28.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **155.41** | **155.66** | **156.02** | **156.48** | **157.07** | **157.78** | **158.61** | **159.58** | **160.69** | **161.94** | **163.34** | **164.89** | **166.61** | **168.50** | **170.56** | **158.83** | **163.66** | **168.68** | **173.92** | **179.37** | **185.05** | **190.96** | **197.12** | **203.53** | **210.21** |

**Levallised 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 | **6.40** | 4.08 | 4.28 | 4.50 | 4.72 | 4.96 | 5.21 | 5.47 | 5.74 | 6.03 | 6.33 | 6.64 | 6.98 | 7.32 | 7.69 | 8.08 | 8.48 | 8.90 | 9.35 | 9.82 | 10.31 | 10.82 | 11.36 | 11.93 | 12.53 | 13.15 |
| O&M expn | Rs/kWh | **1.17** | 0.83 | 0.87 | 0.90 | 0.93 | 0.97 | 1.01 | 1.05 | 1.09 | 1.13 | 1.17 | 1.22 | 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 |
| Depreciation | Rs/kWh | **0.38** | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 0.43 | 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 | **0.28** | 0.55 | 0.52 | 0.48 | 0.44 | 0.40 | 0.36 | 0.33 | 0.29 | 0.25 | 0.21 | 0.17 | 0.13 | 0.10 | 0.06 | 0.02 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.24 | 0.25 | 0.26 | 0.27 | 0.29 | 0.30 | 0.31 | 0.33 | 0.34 | 0.36 | 0.37 | 0.39 | 0.41 | 0.43 | 0.44 | 0.46 | 0.48 | 0.51 | 0.53 | 0.56 | 0.58 | 0.61 | 0.64 | 0.67 | 0.70 |
| RoE | Rs/kWh | **0.46** | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 | 0.46 |
| **Total COG** | **Rs/kWh** | **9.04** | **6.60** | **6.81** | **7.03** | **7.26** | **7.50** | **7.76** | **8.04** | **8.33** | **8.63** | **8.95** | **9.29** | **9.65** | **10.03** | **10.42** | **10.84** | **11.05** | **11.56** | **12.08** | **12.64** | **13.21** | **13.82** | **14.46** | **15.13** | **15.83** | **16.56** |

| | | |
|---|---|---|
| Variable Cost | **4.08** | Rs/kWh |
| Levllised Tariff (Fixed) | 2.65 | Rs/kWh |
| **Levellised Tariff** | **6.73** | **Rs/kWh** |

**Determination of Additional Depreciation for BIOMASS Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 561.98 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 13.12 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 26.24 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 | 12.52 |

| 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% |
| Accelrated Deprn. | Rs Lakh | 168.59 | 196.69 | 78.68 | 47.21 | 28.32 | 16.99 | 10.20 | 6.12 | 3.67 | 2.20 | 1.32 | 0.79 | 0.48 | 0.29 | 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 | 155.47 | 170.45 | 52.43 | 20.96 | 2.08 | -9.25 | -16.05 | -20.13 | -22.57 | -24.04 | -24.92 | -25.45 | -25.77 | -25.96 | -26.07 | -12.42 | -12.46 | -12.49 | -12.50 | -12.51 | -12.52 | -12.52 | -12.52 | -12.52 | -12.52 |
| Tax Benefit | Rs Lakh | 54.33 | 59.56 | 18.32 | 7.32 | 0.73 | -3.23 | -5.61 | -7.03 | -7.89 | -8.40 | -8.71 | -8.89 | -9.00 | -9.07 | -9.11 | -4.34 | -4.35 | -4.36 | -4.37 | -4.37 | -4.37 | -4.37 | -4.38 | -4.38 | -4.38 |
| Energy generation | MU | 3.08 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 6.17 | 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 | 1.76 | 0.97 | 0.30 | 0.12 | 0.01 | -0.05 | -0.09 | -0.11 | -0.13 | -0.14 | -0.14 | -0.14 | -0.15 | -0.15 | -0.15 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 | -0.07 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 7.52 | Rs/Kwh |
| Electricity Generation (Levellised) | 5.90 | Rs/Kwh |
| **Levellised benefit** | **0.13** | **Rs/Kwh** |

| Biomass Gasifier Based Projects (FY 2021-22) | | | | | Annexure XI |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| 1 | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption during stabilisation | % | 10.00% |
| | | | Auxiliary Consumption after stabilisation | % | 10.00% |
| | | | PLF(Stabilization for 6 months) | % | 85.00% |
| | | | PLF(during first year after Stabilization) | % | 85.00% |
| | | | PLF(second year onwards) | % | 85.00% |
| | | | Useful Life | Years | 25 |
| 2 | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 443.49 |
| 3 | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 310.44 |
| | | | Total Equity Amount | Rs Lakh | 133.05 |
| | | Debt Component | Loan Amount | Rs Lakh | 310.44 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 133.05 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| 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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| 6 | **Fuel Related Assumptions** | Biomass | Specific Fuel Consumption | kg/kWh | 1.25 |
| | | | Base Price | Rs/MT | 2958.25 |
| | | - | Escalation Factor for Working Capital | % | 5.00% |
| 7 | **O&M** | O&M Expenses | | Rs Lakh | 63.99 |

| | | | | | |
|---|---|---|---|---|---|
| | | O & M Expenses Esc. | | % | 3.84% |
| **8** | **Generation & Sale** | Total No .Of Hours | | Hrs | 8760.00 |

**Determination of Tariff Component : Biomass Rankine Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 | | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 |

| 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 | | 275.34 | 289.11 | 303.56 | 318.74 | 334.68 | 351.41 | 368.98 | 387.43 | 406.80 | 427.14 | 448.50 | 470.92 | 494.47 | 519.19 | 545.15 | 572.41 | 601.03 | 631.08 | 662.64 | 695.77 | 730.56 | 767.08 | 805.44 | 845.71 | 888.00 |

| 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 | | 63.99 | 66.44 | 68.99 | 71.64 | 74.39 | 77.24 | 80.20 | 83.28 | 86.48 | 89.80 | 93.24 | 96.82 | 100.53 | 104.39 | 108.40 | 112.56 | 116.87 | 121.36 | 126.02 | 130.85 | 135.87 | 141.09 | 146.50 | 152.12 | 157.96 |
| Depreciation | Rs Lakh | | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 | 8.87 |
| Interest on term loan | Rs Lakh | | 27.01 | 25.14 | 23.28 | 21.42 | 19.55 | 17.69 | 15.82 | 13.96 | 12.10 | 10.23 | 8.37 | 6.50 | 4.64 | 2.78 | 0.91 | - | - | - | - | - | - | - | - | - | - |
| Interest on working Capital | Rs Lakh | | 16.32 | 17.03 | 17.78 | 18.58 | 19.40 | 20.28 | 21.19 | 22.15 | 23.16 | 24.22 | 25.33 | 26.49 | 27.71 | 29.00 | 30.34 | 31.62 | 33.13 | 34.71 | 36.36 | 38.10 | 39.92 | 41.83 | 43.84 | 45.94 | 48.14 |
| Return on Equity | Rs Lakh | | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 | 22.57 |
| **Total Fixed Cost** | **Rs Lakh** | | **150.59** | **151.90** | **153.34** | **154.91** | **156.62** | **158.49** | **160.50** | **162.67** | **165.01** | **167.52** | **170.22** | **173.09** | **176.17** | **179.45** | **182.93** | **175.62** | **181.44** | **187.51** | **193.82** | **200.39** | **207.24** | **214.36** | **221.78** | **229.50** | **237.54** |

**Levallised 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 | **6.44** | 4.11 | 4.31 | 4.53 | 4.76 | 4.99 | 5.24 | 5.51 | 5.78 | 6.07 | 6.37 | 6.69 | 7.03 | 7.38 | 7.75 | 8.13 | 8.54 | 8.97 | 9.42 | 9.89 | 10.38 | 10.90 | 11.45 | 12.02 | 12.62 | 13.25 |
| O&M expn | Rs/kWh | **1.34** | 0.95 | 0.99 | 1.03 | 1.07 | 1.11 | 1.15 | 1.20 | 1.24 | 1.29 | 1.34 | 1.39 | 1.44 | 1.50 | 1.56 | 1.62 | 1.68 | 1.74 | 1.81 | 1.88 | 1.95 | 2.03 | 2.11 | 2.19 | 2.27 | 2.36 |
| Depreciation | Rs/kWh | **0.28** | 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** | 0.40 | 0.38 | 0.35 | 0.32 | 0.29 | 0.26 | 0.24 | 0.21 | 0.18 | 0.15 | 0.12 | 0.10 | 0.07 | 0.04 | 0.01 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.36** | 0.24 | 0.25 | 0.27 | 0.28 | 0.29 | 0.30 | 0.32 | 0.33 | 0.35 | 0.36 | 0.38 | 0.40 | 0.41 | 0.43 | 0.45 | 0.47 | 0.49 | 0.52 | 0.54 | 0.57 | 0.60 | 0.62 | 0.65 | 0.69 | 0.72 |
| 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** | **8.96** | **6.36** | **6.58** | **6.82** | **7.07** | **7.33** | **7.61** | **7.90** | **8.21** | **8.53** | **8.87** | **9.23** | **9.61** | **10.01** | **10.43** | **10.86** | **11.16** | **11.68** | **12.22** | **12.78** | **13.37** | **13.99** | **14.65** | **15.33** | **16.04** | **16.80** |

| | | |
|---|---|---|
| Variable Cost | **4.11** | Rs/kWh |
| Levllised Tariff (Fixed) | 2.52 | Rs/kWh |
| **Levellised Tariff** | **6.62** | **Rs/kWh** |

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

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 443.49 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 10.36 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 20.71 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 | 9.88 |

| 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% |
| Accelrated Deprn. | Rs Lakh | 133.05 | 155.22 | 62.09 | 37.25 | 22.35 | 13.41 | 8.05 | 4.83 | 2.90 | 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 | 122.69 | 134.51 | 41.38 | 16.54 | 1.64 | -7.30 | -12.66 | -15.88 | -17.81 | -18.97 | -19.67 | -20.09 | -20.34 | -20.49 | -20.58 | -9.80 | -9.83 | -9.85 | -9.87 | -9.87 | -9.88 | -9.88 | -9.88 | -9.88 | -9.88 |
| Tax Benefit | Rs Lakh | 42.87 | 47.00 | 14.46 | 5.78 | 0.57 | -2.55 | -4.43 | -5.55 | -6.22 | -6.63 | -6.87 | -7.02 | -7.11 | -7.16 | -7.19 | -3.43 | -3.44 | -3.44 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 | -3.45 |
| Energy generation | MU | 3.35 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 | 6.70 |
| Per unit benefit | Rs/Unit | 1.28 | 0.70 | 0.22 | 0.09 | 0.01 | -0.04 | -0.07 | -0.08 | -0.09 | -0.10 | -0.10 | -0.10 | -0.11 | -0.11 | -0.11 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 | -0.05 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 5.93 | **Rs/kWh** |
| Electricity Generation (Levellised) | 6.41 | **Rs/kWh** |
| **Levellised benefit** | **0.09** | **Rs/kWh** |

| **Biogas Based Power Projects (FY 2021-22)** | | | | | **Annexure XII** |
|---|---|---|---|---|---|
| **S. No.** | **Assumption Head** | **Sub-Head** | **Sub-Head (2)** | **Unit** | **Assumptions** |
| **1** | **Power Generation** | Capacity | Installed Power Generation Capacity | MW | 1 |
| | | | Auxiliary Consumption | % | 12.00% |
| | | | PLF | % | 90.00% |
| | | | Useful Life | Years | 25 |
| **2** | **Project Cost** | Capital Cost/MW | Power Plant Cost | Rs Lakh/MW | 856.77 |
| **3** | **Financial Assumptions** | Debt: Equity | Debt | % | 70% |
| | | | Equity | % | 30% |
| | | | Total Debt Amount | Rs Lakh | 599.74 |
| | | | Total Equity Amount | Rs Lakh | 257.03 |
| | | Debt Component | Loan Amount | Rs Lakh | 599.74 |
| | | | Moratorium Period | years | 0 |
| | | | Repayment Period( incld Moratorium) | years | 15 |
| | | | Interest Rate | % | 9.00% |
| | | Equity Component | Equity amount | Rs Lakh | 257.03 |
| | | | Return on Equity (upto 20 years) | % p.a | 16.96% |
| | | | Return on Equity (After 20 years) | | 16.96% |
| | | | Discount Rate ( equiv. to WACC) | % | 8.30% |
| **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) | | 20.00% |
| | | Receivables for Debtors | | Months | 1.5 |
| | | For Variable Charges | | | |
| | | Biomass Stock | | Months | 4 |
| | | Interest On Working Capital | | % | 10.00% |
| **6** | **Fuel Related Assumptions** | Biogas | Specific Fuel Consumption | kg/kWh | 3 |
| | | | Biogas Price | Rs/MT | 1273.06 |
| | | _ | Escalation Factor for Working Capital | % | 5.00% |
| **7** | **O&M** | O&M Expenses | | Rs Lakh | 63.99 |
| | | O & M Expenses | | % | 3.84% |
| **8** | **Generation & Sale** | Total No .Of Hours | | Hrs | 8760 |

# RERC RE GENERIC Tariff Order FY 2020-21 & FY 2021-22

**Determination of Tariff Component: Biogas Based Power Projects**

| Units Generation | Unit | Year---> | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Biogas Cost | Rs. Lakh | | 301.10 | 316.16 | 331.97 | 348.57 | 365.99 | 384.29 | 403.51 | 423.68 | 444.87 | 467.11 | 490.47 | 514.99 | 540.74 | 567.78 | 596.17 | 625.97 | 657.27 | 690.14 | 724.64 | 760.88 | 798.92 | 838.86 | 880.81 | 924.85 | 971.09 |

| 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 | | 63.99 | 66.44 | 68.99 | 71.64 | 74.39 | 77.24 | 80.20 | 83.28 | 86.48 | 89.80 | 93.24 | 96.82 | 100.53 | 104.39 | 108.40 | 112.56 | 116.87 | 121.36 | 126.02 | 130.85 | 135.87 | 141.09 | 146.50 | 152.12 | 157.96 |
| Depreciation | Rs Lakh | | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 39.98 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 | 17.14 |
| Interest on term loan | Rs Lakh | | 52.18 | 48.58 | 44.98 | 41.38 | 37.78 | 34.19 | 30.59 | 26.99 | 23.39 | 19.79 | 16.19 | 12.59 | 9.00 | 5.40 | 1.80 | - | - | - | - | - | - | - | - | - | - |
| Interest on working Capital | Rs Lakh | | 18.34 | 19.09 | 19.89 | 20.72 | 21.60 | 22.52 | 23.49 | 24.51 | 25.58 | 26.70 | 27.88 | 29.12 | 30.43 | 31.80 | 33.23 | 34.48 | 36.11 | 37.82 | 39.61 | 41.49 | 43.47 | 45.54 | 47.71 | 49.98 | 52.37 |
| Return on Equity | Rs Lakh | | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 | 43.60 |
| **Total Fixed Cost** | **Rs Lakh** | | **218.09** | **217.70** | **217.44** | **217.33** | **217.35** | **217.53** | **217.87** | **218.36** | **219.03** | **219.87** | **220.90** | **222.12** | **223.54** | **225.17** | **227.01** | **207.77** | **213.72** | **219.92** | **226.37** | **233.08** | **240.08** | **247.36** | **254.94** | **262.84** | **271.07** |

**Levallised 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 | | 4.34 | 4.56 | 4.78 | 5.02 | 5.28 | 5.54 | 5.82 | 6.11 | 6.41 | 6.73 | 7.07 | 7.42 | 7.79 | 8.18 | 8.59 | 9.02 | 9.47 | 9.95 | 10.44 | 10.97 | 11.52 | 12.09 | 12.70 | 13.33 | 14.00 |
| O&M expn | Rs/kWh | **1.29** | 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 | 2.03 | 2.11 | 2.19 | 2.28 |
| Depreciation | Rs/kWh | **0.51** | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.58 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
| Int. on term loan | Rs/kWh | **0.38** | 0.75 | 0.70 | 0.65 | 0.60 | 0.54 | 0.49 | 0.44 | 0.39 | 0.34 | 0.29 | 0.23 | 0.18 | 0.13 | 0.08 | 0.03 | - | - | - | - | - | - | - | - | - | - |
| Int. on working capital | Rs/kWh | **0.39** | 0.26 | 0.28 | 0.29 | 0.30 | 0.31 | 0.32 | 0.34 | 0.35 | 0.37 | 0.38 | 0.40 | 0.42 | 0.44 | 0.46 | 0.48 | 0.50 | 0.52 | 0.55 | 0.57 | 0.60 | 0.63 | 0.66 | 0.69 | 0.72 | 0.75 |
| RoE | Rs/kWh | **0.63** | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 | 0.63 |
| **Total COG** | **Rs/kWh** | **3.20** | **7.48** | **7.69** | **7.92** | **8.16** | **8.41** | **8.67** | **8.96** | **9.25** | **9.57** | **9.90** | **10.25** | **10.62** | **11.02** | **11.43** | **11.86** | **12.02** | **12.55** | **13.12** | **13.71** | **14.33** | **14.98** | **15.66** | **16.37** | **17.12** | **17.90** |

| | | |
|---|---|---|
| Variable Cost | **4.34** | Rs/kWh |
| Levllised Tariff (Fixed) | 3.20 | Rs/kWh |
| **Levellised Tariff** | **7.54** | **Rs/kWh** |

**Determination of Additional Depreciation for Small Hydro Power Projects**

| | |
|---|---|
| Depreciation amount | 90% |
| Book Depreciation rate (first 15 years) | 4.67% |
| Book Depreciation rate (last 10 years) | 2.00% |
| Tax Depreciation rate | 40% |
| Additional Depreciation | 20% |
| Income Tax (MAT) | 17.472% |
| Income Tax (Normal Rates) | 34.944% |
| Capital Cost | 856.77 |

| 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 | % | 2.34% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 4.67% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% | 2.23% |
| Book Depreciation | Rs Lakh | 20.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 40.01 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 | 19.09 |

| 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% |
| Accelrated Deprn. | Rs Lakh | 257.03 | 299.87 | 119.95 | 71.97 | 43.18 | 25.91 | 15.55 | 9.33 | 5.60 | 3.36 | 2.01 | 1.21 | 0.73 | 0.44 | 0.26 | 0.16 | 0.09 | 0.06 | 0.03 | 0.02 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Net Depreciation Benefit | Rs Lakh | 237.03 | 259.86 | 79.94 | 31.96 | 3.17 | -14.10 | -24.47 | -30.68 | -34.41 | -36.65 | -38.00 | -38.80 | -39.29 | -39.58 | -39.75 | -18.94 | -19.00 | -19.04 | -19.06 | -19.07 | -19.08 | -19.09 | -19.09 | -19.09 | -19.09 |
| Tax Benefit | Rs Lakh | 82.83 | 90.80 | 27.93 | 11.17 | 1.11 | -4.93 | -8.55 | -10.72 | -12.03 | -12.81 | -13.28 | -13.56 | -13.73 | -13.83 | -13.89 | -6.62 | -6.64 | -6.65 | -6.66 | -6.66 | -6.67 | -6.67 | -6.67 | -6.67 | -6.67 |
| 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 | 2.39 | 1.31 | 0.40 | 0.16 | 0.02 | -0.07 | -0.12 | -0.15 | -0.17 | -0.18 | -0.19 | -0.20 | -0.20 | -0.20 | -0.20 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 | -0.10 |
| Discounting Factor | | 1.00 | 0.92 | 0.85 | 0.79 | 0.73 | 0.67 | 0.62 | 0.57 | 0.53 | 0.49 | 0.45 | 0.42 | 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 | 0.65 | 0.60 | 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 | 0.20 | 0.18 | 0.17 | 0.15 |

| | | |
|---|---|---|
| Tax Benefit Levellised | 11.46 | **Rs/Unit** |
| Electricity Generation (Levellised) | 6.64 | **Rs/Unit** |
| **Levellised benefit** | **0.17** | **Rs/Unit** |