



**TELANGANA STATE ELECTRICITY REGULATORY COMMISSION HYDERABAD  
5th Floor, Singareni Bhavan, Red Hills, Lakdi-ka-pul, Hyderabad 500004**

**O.P.No. 14 of 2020**

**Dated: 18.04.2020**

**Present**

**Sri T.Sriranga Rao, Chairman  
Sri M.D.Manohar Raju, Member (Technical)  
Sri Bandaru Krishnaiah, Member (Finance)**

**In the matter of Suo-Moto Determination of Generic Tariff for electricity generated from Refuse Derived Fuel (RDF) based power projects in the State of Telangana achieving Commercial Operation Date (COD) during the period from FY 2020-21 to FY 2023-24**

**ORDER**

1. Section 62 of the Electricity Act, 2003 empowers the Commission to determine the tariff for supply of electricity by a Generating Company to a Distribution Licensee. Section 86 (1) (e) of the Electricity Act, 2003 mandates the Commission to promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person. The Tariff Policy, 2016 mandates Distribution Licensees to compulsorily procure 100% power produced from all the Waste-to-Energy (WtE) plants in the State, in the ratio of their procurement of power from all sources including their own, at the tariff determined by the Appropriate Commission from time to time.
2. In exercise of powers vested in it under Sections 62 (1) read with 86 (1) (a), (b), (c) & (e) of the Electricity Act, 2003, the Commission, through this Order, determines the Generic Tariff for purchase of power by the

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Distribution Licensees in the State of Telangana from Refuse Derived Fuel (RDF) based Waste-to-Energy (WtE) power generation plants whose Commercial Operation Date (COD) achieved during the period from FY 2020-21 to FY 2023-24.

### **BACKGROUND**

3. The Commission vide its Order dated 13.06.2016 in O.P.No.18 of 2016 determined the Generic Tariff for electricity generated from Municipal Solid Waste (MSW) and RDF based power projects in the State of Telangana achieving COD during the period from 13.06.2016 to 31.03.2019. During this period, no new projects based on MSW or RDF have become operational in the State.

### **GENERIC TARIFF DETERMINATION**

4. The Commission has initiated a Suo-Moto exercise to determine the Generic Tariff for electricity generated from RDF based power projects in the State of Telangana achieving COD during the period from 01.04.2020 to 31.03.2024. Accordingly, issued the Public Notice dated 20.03.2020 inviting the written suggestions and comments from all stakeholders on the proposed financial and technical norms and the tariff on or before 15.04.2020 by 5.00 P.M. The Commission has received written suggestions and comments from fifteen (15) nos. stakeholders within the stipulated time and from four (4) nos. stakeholders after the stipulated time. The list of stakeholders who have submitted the written suggestions and comments is enclosed at Annexure 1 of the Order. The Commission has considered all the nineteen (19) objections received from the stakeholders.

### **TARIFF DETERMINATION APPROACH**

5. The Tariff Policy, 2016 dated 28.01.2016, notified by Government of India in pursuance to Section 3 of the Electricity Act, 2003 has stipulated that the Appropriate Commission may determine tariff for procurement of power by the Distribution Licensees from WtE plants under Section 62 of the Electricity Act, 2003. In view of this provision in the Tariff Policy, 2016, the Commission determines the Generic tariff for RDF based power

projects on cost-plus basis under Section 62 of the Electricity Act, 2003 in this Order.

## DEFINITIONS

6. “Auxiliary Consumption” in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station, and transformer losses within the generating station, expressed as percentage of the sum of gross energy generated at generator terminals of all the units of the generating station.
7. “Refuse Derived Fuel (RDF)” means segregated combustible fraction of solid waste other than chlorinated plastics in the form of pellets or fluff produced by drying, de-stoning, shredding, de-hydrating and compacting combustible components of solid waste that can be used as fuel.
8. “RDF based power project” means a power project using the new plant and machinery based on the Rankine Cycle Technology (RCT) and using RDF as fuel source;  
Provided such plant and machinery should not have been used for generation of power in a project anywhere in India prior to installation in the subject project in the State of Telangana.
9. “Tipping Fee” means a fee or support price determined by the local authorities or any state agency authorised by the State Government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill.

## ISSUES RAISED BY STAKEHOLDERS AND COMMISSION’S VIEWS THEREON

10. Vide the Public Notice dated 20.03.2020, the Commission had proposed the following financial and technical norms for RDF based power projects in the State of Telangana achieving COD during the period from 01.04.2020 to 31.03.2024:

Table 1: Proposed norms in the Public Notice dated 20.03.2020

S. No.	Parameter	Units	Proposed Norm
1.	Capital Cost	Rs. Crore/MW	9

S. No.	Parameter	Units	Proposed Norm
2.	Plant Load Factor (PLF)	%	First Year – 65% From Second Year – 80%
3.	Operation and Maintenance (O&M) expenses	%	5% of Capital Cost
4.	Annual escalation on O&M expenses	%	5.72%
5.	Plant Life	Years	20
6.	Land Value	Rs. Lakhs/MW	5
7.	Salvage Value	%	10%
8.	Depreciation	%	7% for first 10 years and 2% for the following 10 years
9.	Rate of Return on Equity (Post-tax)	%	14%
10.	Income Tax	-	Income Tax paid by the Generator on the income derived from the power project shall be reimbursed by the Distribution Licensee(s) on submission of challans of payment of Tax to the Income Tax Department.
11.	Interest on long-term loan	%	12%
12.	Loan Tenure	Years	10
13.	Debt: Equity ratio	-	70:30
14.	Working Capital components	-	1. O&M expenses for 1 month 2. Maintenance spares @ 1% of the capital cost escalated at 5% per annum 3. Receivables equivalent to 1 month for sale of electricity calculated on normative PLF 4. Fuel Cost for 1 month equivalent to normative PLF
15.	Rate of Interest on Working Capital	%	12.5%
16.	Discount rate	%	12.60%
17.	Auxiliary Consumption	%	11%
18.	Station Heat Rate	kcal/kWh	4000
19.	Gross Calorific Value	kcal/kg	2500
20.	Base Fuel Price	Rs./MT	1800
21.	Annual Fuel Price escalation	%	5%
22.	Base Tipping Fee	Rs./MT	1431
23.	Annual escalation on Tipping Fee	%	5%

S. No.	Parameter	Units	Proposed Norm
24.	Incentives	-	Any incentives, State or Central, received by the Generator to be passed on to the Distribution Licensee(s) procuring power from the Generator

11. Based on the above proposed parameters, the Commission has proposed the Levelised Tariff of Rs.7.76/kWh comprising of Levelised Fixed Cost of Rs.3.31/kWh and Levelised Variable Cost of Rs.4.45/kWh respectively. Further, the Commission has proposed that the impact of Tipping Fee of Rs.3.54/kWh shall be reimbursed to the Distribution Licensee(s) on receipt of Tipping Fee by the Generator under the provisions of the Concession Agreement.
12. The suggestions and comments filed by the stakeholders and Commission's views thereon have been summarised issue wise as detailed below.

#### **Issue No. 1: Tariff for MSW based power projects**

##### **Stakeholders' submission**

13. The Commission may consider the tariff determination for MSW based power projects along with RDF based power projects.

##### **Commission's view**

14. The present exercise has been initiated only for generic tariff determination of RDF based power projects.

#### **Issue No. 2: Duration of Control Period**

##### **Stakeholders' submission**

15. The WtE projects has long course of implementation due to long drawn process and some projects even taken 3 to 4 years or more till COD is achieved. Therefore, the Control Period may be specified as 5 years or more.

##### **Commission's view**

16. The Commission's Order dated 13.06.2016 in O. P. No. 18 of 2016 was

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applicable for the Control Period from FY 2016-17 (w.e.f. 13.06.2016) to FY 2018-19. The subsequent Control Period was to commence from FY 2019-20; however, FY 2019-20 is already over. Moreover, the current Control Period for conventional generation and distribution businesses regulated by the Commission is from FY 2019-20 to FY 2023-24. Therefore, the generic tariff determined in this Order has been made applicable for the projects achieving COD during the period from 01.04.2020 to 31.03.2024.

### **Issue No. 3: Capital Cost**

#### **Stakeholders' submission**

17. Solid waste in India has low heat value and should be processed and segregated to enhance its heat value. There is no effective source segregation in India. Even if the waste is segregated and refined, the basic heterogeneity nature of the waste is intrinsic and is a typical characteristic of waste as fuel. Because of the heterogeneity and also the climatic and seasonal changes as well as practices of collection and transportation, the waste combustors are complex in construction. Moreover, the WtE plants are characterized by low ash fusion temperature and fouling and slagging which are major issues in operation & maintenance (O&M). Fire side corrosion is a threat for the Combustors /boilers and thus require special refractory as well as special grade material. These factors contribute to capital cost as well as O&M cost. There is inadequate indigenous capability for manufacturing the reciprocating grate and waste combustors in India and make in India concept has to be strengthened in order to avoid dependence on import, particularly in view of USD appreciation vis-à-vis INR.
  
18. The proposed capital cost of Rs.9 Crore/MW is comparable to the current capital cost of biomass projects. The heat transfer area and volume of waste to be fed in WtE plants are much higher than that of biomass plants. Considering the extent of civil works, special type boiler, flue gas treatment, waste feeding grabs and medium pressure and temperature operating turbine essential in WtE plants, the proposed capital cost is low

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and not aligned to market or actual costs of projects under implementation. Some of the WtE plants have compromised on the machinery to reduce the capital cost and have subsequently failed to operate.

19. The capital cost of the WtE plant of 24 MW installed capacity being operated by M/s Delhi MSW Solutions Pvt. Ltd., which is operating an integrated municipal solid waste management project since 2009 for New Delhi Municipal Council under Public Private Partnership mode, is Rs.15 Crore/MW. The capital cost of a similar RDF based power project at Ghazipur is more than Rs.22 Crore/MW. The capital cost of RDF based power project of 19.8 MW capacity being set up by M/s Hyderabad MSW Energy Solutions Pvt. Ltd. is Rs.20 Crore/MW. The capital cost of RDF based power project being set up by M/s RDF Power Projects Ltd. is more than Rs.19 Crore/MW. The capital cost approved by Karnataka Electricity Regulatory Commission, Tamil Nadu Electricity Regulatory Commission, Kerala State Electricity Regulatory Commission and Maharashtra Electricity Regulatory Commission is Rs.17 Crore, Rs.17 Crore, Rs.16.52 Crore and Rs.17.97 Crore respectively.
20. The estimated capital cost of RDF based power project of 12 MW capacity being developed by M/s Sri Venkateswara Green Power Projects Ltd. at Yacharam is Rs.15.5 Crore/MW. The project is equipped with air cooled condenser owing to low water table at plant site and the water required for day-to-day operations is proposed to be brought from sewage treatment plant at Nagoletto project site by laying 50 km pipeline with 20 pump houses.
21. The stakeholders have suggested the capital cost in the range of Rs.15 Crore/MW to Rs.20 Crore/MW.
22. The stakeholders have suggested additional capital cost of Rs.0.75 Crore/MW for the projects deploying Air Cooled Condenser in lieu of Water-Cooled Condenser. The stakeholders have also suggested additional capital cost for cost of transmission line considering the remoteness of the projects.

### Commission's view

23. The Commission has taken note of the stakeholders' submissions regarding the capital cost. As regards the approved capital cost by other Electricity Regulatory Commissions cited by the stakeholders, it is to be noted that such projects are MSW based power projects with single part tariffs and the reliance on the same is misplaced.
24. It appears that the stakeholders are plainly comparing the capital cost figures and are oblivious of the fact that the generic tariff proposed by the Commission is a two-part tariff. The capital cost of Rs.9 Crore/MW is considered for determination of Fixed Cost and the recovery of capital cost of RDF production facilities is inbuilt in the RDF price. The recovery of capital cost of RDF production facilities cannot be allowed to be recovered twice through Fixed Cost as well as Variable Cost. Even if considering the capital cost of Rs.20 Crore/MW allowed to be recovered through single part tariff at the approved norms would translate to the Levelised Tariff of Rs.7.39/kWh. The proposed Levelised Tariff under two-part tariff structure is more than the Levelised Tariff under single part tariff structure.
25. The details of norms of capital cost considered and approved levelised tariff by various Electricity Regulatory Commissions is tabulated below:

Table 2: Details of Capital cost considered and approved levelised Tariff by ERCs

S. No.	Generating company	Installed Capacity (MW)	Capital Cost (Rs. Crore/MW)	Levelised Tariff (Rs./kWh)	Order Reference
1.	M/s Delhi MSW Solutions Pvt. Ltd.	24	15	7.03	Delhi Electricity Regulatory Commission (DERC) Order dated 27.07.2016 in Petition No. 27/2016
2.	Generic Tariff	-	9	7.07	Gujarat Electricity Regulatory Commission Order No. 4 of 2016 dated 10.11.2016

26. From the above, it could be observed that the capital cost and the two-part



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tariff structure adopted by the Commission is fairly conducive for promotion of RDF based power projects in the State. In view of the above, the Commission approves the capital cost of Rs.9 Crore/MW.

27. As regards the suggestions to provide for additional capital cost, the Commission does not find it necessary to provide for the same for the above-mentioned reasons and the capital cost approved in this Order shall be the normative capital cost.

#### **Issue No. 4: Plant Load Factor (PLF)**

##### **Stakeholders' submission**

28. Annual operating hours of WtE plants do not translate to PLF in terms of electricity generation. Waste combustors are sized on throughput of waste basis than on steam generation capacity. The primary purpose of waste management through WtE is to achieve volume reduction of waste, dispose thermally reducing the waste to high density ash and power generation is only incidental.
29. The PLF for the WtE plants with even refined and segregated waste cannot be on par with 80% which is an applicable benchmark for coal based and biomass power plants. The main reason is the characteristics of fuel. Unlike coal having uniform characteristics with respect to calorific value, size or moisture, in case of MSW, the characteristics differ from season to season with respect to moisture etc. and this fluctuation is intrinsic of waste due to heterogeneity, method of collection, economic vibrancy of the area of collection of waste, climatological data of the region where the plant is set up. The WtE plants are comparable to biomass power plant, with additional characteristics of WtE plants like choking, sudden pressure drops etc., and there is not record of the biomass power plants achieving the PLF of 80% in the country.
30. The WtE plant of M/s Delhi MSW Solutions Pvt. Ltd. has been in operation for 3 years and could achieve PLF of 51%, 65%, and 69% in FY 2017-18, FY 2018-19 and FY 2019-20 respectively. The WtE plant of M/s East Delhi Waste Processing Company Ltd. with 12 MW installed capacity in

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Ghazipur, Delhi could achieve the generation of 37346714 kWh in FY 2019-20.

31. The stakeholders' suggestions regarding the PLF are as under:
- i. 65% for first year and 70% from second year onwards.
  - ii. 65% for first year and 75% from second year onwards.
  - iii. 65% for first year and 80% from second year onwards.
  - iv. 65% for first two years and 70% from third year onwards.
  - v. 65% for first two years and 75% from third year onwards.
  - vi. 65% for first year, 70% for second year and 75% from third year onwards.
32. The stakeholders have also suggested that incentive for achieving PLF higher than the norm may be specified in line with approved incentive of 25 paise/kWh for biomass and MSW plants.

#### **Commission's view**

33. The Commission does not subscribe to the stakeholders' submission that power generation is only incidental to the process of solid waste management. There are various technological options of solid waste management and power generation is one among those options. The RDF based power projects currently under development in the State are of 14 MW and 19.8 MW installed capacities. The developer of 19.8 MW capacity power project has further plans to expand two more units of 15 MW and 28 MW in the next 2-3 years. Such significant potential for power generation cannot be brushed away as incidental to the process of solid waste management. Feasibility of such significant power generation capacity is an indication of availability of adequate fuel for power generation.
34. The PLF in case of a WtE project is dependent on factors like availability of waste, quality of waste, number of operating hours, geographical area of waste collection and project site. As the supply of waste to the developer is governed by the terms of the Concession Agreement, it is the responsibility of the developer to ensure adequate fuel for the power project for achieving the normative PLF. The project also requires some

time for uninterrupted operations by ironing out the initial teething problems. In light of the same, the Commission deems it fit to approve the PLF of 65% for first year, 75% for second year and 80% from third year and onwards.

35. The Commission does not subscribe to the stakeholders submission that providing incentive for higher PLF than the approved PLF.

### **Issue No. 5: Operation and Maintenance (O&M) expenses**

#### **Stakeholders' submission**

36. The proposed norm of Operation and Maintenance (O&M) expenses at 5% of capital cost with annual escalation of 5.72% is on lower side. The O&M expenses of WtE plants is higher than biomass, cogeneration and fossil fuel based power plants on account of:
- i. Use of consumables like lime, activated carbon, ammonia, hydraulic oil etc.
  - ii. Use of flue gas treatment and chemical costs thereof.
  - iii. Use of grab crane for feeding waste.
  - iv. Corrosive nature of fuel and need for refurbishment and replacement.
  - v. Slagging and fouling.
  - vi. Waste pit handling and operators.
  - vii. Special skills required for O&M.
  - viii. Additional manpower required as compared to conventional power plant.
37. In addition to regular O&M expenses, 20% of the capital cost may be allowed as replacement cost with annual escalation as applicable for O&M expenses. The replacement capex should be phased year-on-year starting from 6th year after COD for the balance 15 years in equal instalments.
38. The O&M expenses approved by other State Electricity Regulatory Commissions are as under:
- Karnataka Electricity Regulatory Commission – 6% of capital cost with annual escalation of 5.72%.
  - Tamil Nadu Electricity Regulatory Commission – 5.5% of 85% of

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capital cost and 0.9% of 15% of capital cost with annual escalation of 5.72%.

- Kerala Electricity Regulatory Commission – 6% of capital cost with annual escalation of 5.72%.
- Maharashtra Electricity Regulatory Commission – 8.87% of capital cost with annual escalation of 5.72%.

39. The suggestions of various stakeholders regarding the O&M expenses are as under:

- i. 6% of capital cost with annual escalation of 5.72%.
- ii. 6% of capital cost with annual escalation of 6%.
- iii. 7% of capital cost with annual escalation of 5.72%.
- iv. 7.5% of capital cost with annual escalation of 5.72%.
- v. 7.5% of capital cost with annual escalation of 6%.
- vi. 7.5% of capital cost with annual escalation of 7.5%.
- vii. 8% of capital cost with annual escalation of 5%.
- viii. 9% of capital cost with annual escalation of 5.72%.

#### **Commission's view**

40. The Commission is of the view that the stakeholders' suggestions regarding the O&M expenses are in the backdrop of the suggestions regarding the capital cost. In light of the detailed rationale provided in the approval of capital cost, the Commission approves the O&M expenses at 5% of capital cost with annual escalation of 5.72%.

41. In addition to one-month O&M expenses, maintenance spares at the rate of 1% of capital cost with annual escalation of 5% are allowed in working capital which leads to higher O&M expenses. Therefore, the Commission does not find it prudent to allow replacement cost in addition to O&M expenses as the maintenance spares has been included in the working capital and interest thereon is allowed in tariff.

#### **Issue No. 6: Land Value**

##### **Stakeholders' submission**

42. For WtE project, land plays a major role in smooth operation of the plants.

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As per the norms advised by the Telangana State Renewable Energy Development Corporation Ltd. (TSREDCO), M/s Sri Venkateswara Green Power Projects Ltd. was supposed to have a minimum of 25 acres land for setting up the RDF facility. M/s Sri Venkateswara Green Power Projects Ltd. has acquired project land at Yacharam at the cost of Rs.19.5 Lakhs/acre.

43. The land value is not required to be indicated separately as the capital cost is inclusive of land cost.

**Commission's view**

44. The land value is shown only for indicate purposes and the same is included in the capital cost.

**Issue No. 7: Depreciation**

**Stakeholders' submission**

45. The replacement costs of WtE plants are high. Therefore, 60% is to be depreciated in 10 years and balance 40% in remaining 10 years.
46. Depreciation may be allowed at 5.83% for first 12 years and at 2.51% from 13th year onwards in line with the Central Electricity Regulatory Commission (CERC) norms.

**Commission's view**

47. The depreciation rates have been derived based on the proposed loan tenure of 10 years. As discussed below, the Commission has approved the loan tenure of 12 years and hence, the depreciation rates have been approved as 5.83% for 1-12 years and 2.50% from 13th year onwards.

**Issue No. 8: Rate of Return on Equity**

**Stakeholders' submission**

48. The WtE plants are generally characterised by preferential feed in tariff. The investment in the WtE plants are risky on account of:
- i. Long gestation.
  - ii. No proven manufacturers in India.

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- iii. Lack of operational precedence and uncertainty.
  - iv. Non availability of assured line of credit on par with international norms.
  - v. High capital cost.
  - vi. High capital outlay.
  - vii. Need for high calibre professional skill for operations.
49. The rate of Return on Equity approved by other State Electricity Regulatory Commissions are as under:
- Karnataka Electricity Regulatory Commission – 16%.
  - Tamil Nadu Electricity Regulatory Commission – 17.6% pre-tax.
  - Kerala Electricity Regulatory Commission – 14% pre-tax.
  - Maharashtra Electricity Regulatory Commission – 20.34% for first 10 years grossed up for IT and 24.47% for next 10 years grossed up for IT.
50. The stakeholders have suggested the rate of Return on Equity in the range of 16% - 20%. The stakeholders have also suggested differential rate of Return on Equity i.e., 20% for first 10 years and 24% for remaining 10 years.

#### **Commission's view**

51. The stipulated time for development of WtE projects in the State is 24 months of date of agreement with TSREDCO. The construction period of 24 months cannot be construed as long gestation period.
52. The Distribution Licensees in Telangana State are allowed the rate of Return on Equity of 14%. The TSERC (Terms and Conditions of Generation Tariff) Regulations, 2019 (Regulation No.1 of 2019) stipulate the rate of Return on Equity of 15.50% for thermal generating stations. For promotion of RDF based power projects, the Commission deems it prudent to approve the rate of RoE of 16% on post-tax basis.

#### **Issue No. 9: Income Tax**

##### **Stakeholders' submission**

53. As Return on Equity is allowed on post-tax basis, reimbursement of

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income tax has to be at actuals.

**Commission's view**

54. Income tax paid by the generator on the income derived from the power project shall be reimbursed by the Distribution Licensee(s) on submission of challans of payment of income tax to the income tax department.

**Issue No. 10: Interest on long-term loan**

**Stakeholders' submission**

55. The CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 stipulate the interest on long-term loan at average Marginal Cost of Funds based Lending Rate (MCLR) for past six months plus 200 basis points. CERC has approved the interest rate of 10.41% for FY 2019-20. The interest rate of 9.91% may be allowed in line with the provisions of the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017.
56. Power Finance Corporation Limited (PFC) has in-principally approved for lending 70% of the total debt requirement of M/s Sri Venkateswara Green Power Projects Ltd. The terms and conditions imposed by the lender are as under:
- i. Interest rate is 12.15%.
  - ii. Debt Service Reserve Account (DSRA) to be maintained for two quarters.
57. The deposits made towards DSRA and Fuel Reserve Account (FRA) were proposed due to uncertainty on debt service and uncertainty on fuel supply respectively. The impact of these reserve amounts is upward increase of rate of interest at 0.5%. Therefore, the interest on long-term loan may be considered as 13%.

**Commission's view**

58. The Commission is of the view that the WtE projects being at nascent stage in the State, the developers may not be able to negotiate aggressive

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interest rates with the lenders. The Commission cannot also consider abnormal interest rate in generic tariff determination based on the project experience of one developer. Therefore, the Commission approves interest on long-term loan at the rate of 12%.

### **Issue No. 11: Loan Tenure**

#### **Stakeholders' submission**

59. The proposed loan tenure is 10 years whereas the lender of M/s Sri Venkateswara Green Power Projects Ltd. has considered 15-year door-to-door (24 months construction, 1 year moratorium and 12 years of repayment)

#### **Commission's view**

60. The Commission had proposed the loan tenure of 10 years to provide for early recovery of debt service obligation. The Commission has revisited this issue and accordingly approves the loan tenure as 12 years.

### **Issue No. 12: Working Capital components**

#### **Stakeholders' submission**

61. WtE plant requires frequent maintenance because of huge refractory in the furnace, wear & tear in pressure parts, grabs, bag filter, exposure of civil structures such as MSW pit, leachate pool, tipping floor etc. to leachate. Further, major maintenance is required in the pit area once in two or three years. The stakeholders suggested that 2 months O&M expenses may be considered in working capital.

#### **Commission's view**

62. In addition to one-month O&M expenses, maintenance spares at the rate of 1% of capital cost with annual escalation of 5% are allowed in the working capital and this translates to more than 2 months O&M expenses. Therefore, the Commission does not find it prudent to accept the stakeholders' suggestion to consider 2 months O&M expenses as maintenance spares are considered separately in working capital.



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**Issue No. 13: Rate of interest on working capital****Stakeholders' submission**

63. The CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 stipulate the rate of interest on working capital at average MCLR for past one year plus 300 basis points. CERC Commission has approved the interest rate of 11.41% for FY 2019-20. The interest rate of 11.1375% may be allowed in line with the provisions of the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017.

**Commission's view**

64. The Commission is of the view that the WtE projects being at nascent stage in the State, the developers may not be able to negotiate aggressive interest rates with the lenders. Therefore, the Commission approves rate of interest on working capital as 12.5%.

**Issue No. 14: Discount Rate****Stakeholders' submission**

65. Based on the interest on loan at 9.91%, rate of RoE as 14% and income tax at 29.12%, the discount rate works out to 9.1%.

**Commission's view**

66. Based on the interest on long-term loan of 12%, rate of Return on Equity of 16% and Debt Equity ratio of 70:30, the Commission approves the discount rate, equivalent to weighted average cost of capital, of 13.20%.

**Issue No. 15: Auxiliary Consumption****Stakeholders' submission**

67. The proposed auxiliary consumption of 11% is on lower side for WtE plants characterised by (i) higher size combustion air fans and ID fan, (ii) boilers with large furnace area and long flue path (iii) additional equipment like waste feeding grabs, flue gas treatment, overhung grab cranes etc., and (iv) air cooled condensers.
68. The pre-processing system requires auxiliary power consumption to the

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extent of 3% - 4% and the leachate treatment plant to the extent of 2% - 3%. Further, power is required even during shut down, for operating the odour control system, MSW grabs, leachate pumps etc.

69. The auxiliary consumption approved by Karnataka Electricity Regulatory Commission, Tamil Nadu Electricity Regulatory Commission, Kerala State Electricity Regulatory Commission and Maharashtra Electricity Regulatory Commission is 12%, 15%, 15% and 17.17% respectively.
70. The WtE plant of M/s Delhi MSW Solutions Pvt. Ltd. has been in operation for 3 years and could achieve auxiliary consumption of 20.8%, 18.2%, and 16.6% in FY 2017-18, FY 2018-19 and FY 2019-20 respectively. The WtE plant of M/s East Delhi Waste Processing Co. Ltd. could achieve the auxiliary consumption of 26.60% in FY2019-20.
71. The stakeholders have suggested the auxiliary consumption in the range of 15% - 20%. The stakeholders have also suggested year-on-year correction of auxiliary consumption if the actual auxiliary consumption is higher than the norm.

#### **Commission's view**

72. The Commission recognises the fact that the RDF based power projects comprise of more auxiliaries and accordingly, the auxiliary consumption norm has been specified as 11%, higher than the norm of 10% for biomass power projects.
73. Auxiliary Consumption means the quantum of energy consumed by auxiliary equipment of the generating station, and transformer losses within the generating station, expressed as percentage of the sum of gross energy generated at generator terminals of all the units of the generating station. Therefore, the auxiliary consumption in percentage terms would be higher than the norm if the achieved PLF is lower than the norm. The Commission cannot consider abnormal auxiliary consumption in generic tariff determination based on the project experience of one or two developers. Therefore, the Commission approves auxiliary consumption norm of 11%.

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**Issue No. 16: Station Heat Rate****Stakeholders' submission**

74. MSW in India is heterogeneous in nature containing high biodegradable and moisture contents and is also mixed with inert like debris; therefore, heat value of mixed MSW is very low. The absence of source segregation of solid waste also poses problems for processing and disposal. The stakeholders have suggested the station heat rate in the range of 4000 kcal/kWh – 4500 kcal/kWh.

**Commission's view**

75. The Commission has proposed the normative station heat rate of 4000 kcal/kWh. The stakeholders have suggested a higher norm citing the fuel quality. It is pertinent to mention that unlike a biomass power project where the quality and quantity of fuel is completely the risk of the project developer, the quality and quantity of fuel for WtE projects are guaranteed by the urban local body. It is the responsibility of the developer to ensure adequate quality and quantity of fuel for operation at normative parameters. Therefore, the Commission approves the station heat rate of 4000 kcal/kWh.

**Issue No. 17: Gross Calorific Value****Stakeholders' submission**

76. MSW is heterogeneous in nature and the quality is influenced by seasonal conditions and decentralised sourcing of waste from different places. Based on the operational experience of WtE plants in Delhi, Pune and Hyderabad, the GCV of raw MSW varies from 800 kcal/kg to 1500 kcal/kg and the GCV of RDF varies from 1750 kcal/kg to 2000 kcal/kg.
77. The stakeholders have suggested the GCV in the range of 1500 ~ 2100 kcal/kg.

**Commission's view**

78. The Commission has proposed the GCV of 2500 kcal/kg. The stakeholders have suggested lower GCV citing the fuel quality. It is

pertinent to mention that unlike a biomass power project where the quality and quantity of fuel is completely the risk of the project developer, the quality and quantity of fuel for WtE projects are guaranteed by the urban local body. It is the responsibility of the developer to ensure adequate quality and quantity of fuel for operation at normative parameters. Therefore, the Commission approves the GCV of 2500 kcal/kg.

### **Issue No. 18: Base Fuel Price**

#### **Stakeholders' submission**

79. Considering the fuel price of Rs.1800/MT as per the previous Generic Tariff Order of the Commission and annual escalation of 5%, the fuel price for FY 2019-20 works out to Rs.2188/MT. Adding the royalty of Rs.25/MT payable by M/s Sri Venkateswara Green Power Projects Ltd. to GHMC, the Base Fuel Price may be considered as Rs.2213/MT.
80. One stakeholder has suggested the Base Fuel Price of Rs.1500 / MT.

#### **Commission's view**

81. The Commission does not find merit in the suggestions regarding the fuel price in the absence of operational experience of RDF based power projects in the State. Therefore, the Commission approves the Base Fuel Price of Rs.1800/MT.

### **Issue No. 19: Annual Fuel Price escalation**

#### **Stakeholders' submission**

82. The annual fuel price escalation may be adopted as per actuals. The stakeholders have suggested the annual fuel price escalation in the range of 3% - 6%.

#### **Commission's view**

83. The annual fuel price escalation cannot be considered on actual basis in generic tariff determination for entire life of the project. Therefore, the Commission approves the annual fuel price escalation of 5% on normative basis.

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**Issue No. 20: Tipping Fee****Stakeholders' submission**

84. The WtE plants are generally characterised by gate fee in the countries like Singapore, China, Korea, Japan etc. Globally, the waste management is centered on the concept of gate fee/Tipping Fee as a sustainable model for investments and accomplishing the task of effective solid waste management. Tipping Fee is a contract price for operator of MSW facility which is paid for various activities of waste management like segregation, processing, aerobic composting, anaerobic digestion, thermal processing of waste (waste to energy) leachate treatment and disposal, disposal of residues into a sanitary landfill and post closure maintenance of the same.
85. The Tipping Fee is a bidding parameter for MSW projects and the developer agency decides in the tender based on various components in the project including statutory compliances besides high capital and operational costs. The Tipping fee is paid by the municipal authority based on the quantity of actual waste processed at the facility. The contract amount is paid as per the Concession Agreement between the developer and the municipality, the authority implementing the project. The developer is eligible for recovering the revenues out of sale of compost, power and as also the revenue from the Tipping Fee. The Tipping Fee is expected to cover the difference between the sum of revenue from sale of all products and the O&M expenses. The tendering process is carried out by any municipal authority on the basis of such assumption, which is declared in the bid and the Concession Agreement. A part of Tipping Fee, usually not exceeding 10%, is withheld to be deposited into an Escrow Account for meeting the obligation of post closure of the landfill, that is after expiry of the Concession Agreement. The facilities are returned to the concession authority at the end of concession period.
86. Presently, irrespective of any technology, the Indian cities are facing great problems in disposal of MSW in scientific and sustainable manner. The processing of combustible fraction of MSW viz., RDF to power meeting environmental norms is better and viable option much suited for waste

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conditions in India. The fuel with enhanced fuel value used for power generation cannot be benchmarked to the quantum of incoming mixed, raw waste which does not have any appreciable fuel value and need segregation prior to its use as fuel. The fuel portion is only a fraction of the raw waste.

87. The proposal for reimbursement of impact of Tipping Fee to the Distribution Licensee(s) will make the WtE projects unviable and is also a violation of Concession Agreement. Further, the reimbursement of impact of Tipping Fee to the Distribution Licensee(s) will not attract investment and purpose of preferential tariff will be defeated. The proposal of reimbursement of impact of Tipping Fee may be withdrawn as significant capacity addition is needed in Telangana State.
88. The WtE plant being set up by M/s Hyderabad MSW Energy Solutions Pvt. Ltd. is not entitled for any Tipping Fee from any urban local body and Greater Hyderabad Municipal Corporation. Hence, the proposal of reimbursement of impact of Tipping Fee to the Distribution Licensee(s) does not apply in the case of M/s Hyderabad MSW Energy Solutions Pvt. Ltd.
89. The WtE plant being set up by M/s Sri Venkateswara Green Power Projects Ltd. is not entitled for any Tipping Fee as per its agreement with GHMC. However, as per the G.O. M.s.No.413 dated 11.06.2018, the state level official committee shall decide the Tipping Fee/processing fee. As of now, M/s Sri Venkateswara Green Power Projects Ltd. does not have any incoming revenue from the municipal corporation, rather royalty is being paid to the municipal corporation.
90. The impact of Tipping Fee as determined by the Commission may be deducted upfront from the tariff payable by the Distribution Licensee(s).

#### **Commission's view**

91. The Commission has gone through the stakeholders' submission regarding the Tipping Fee. The Commission does not subscribe to the stakeholders' submission that the Tipping Fee is to cover the difference

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between the sum of revenue from sale of all products and the O&M expenses. Tipping Fee means a fee or support price determined by the local authorities or any state agency authorised by the State Government to be paid to the concessionaire or operator of waste processing facility or for disposal of residual solid waste at the landfill. When the cost-plus tariff for electricity generated from waste is determined under Section 62 of the Electricity Act, 2003 by allowing all the legitimate expenses plus Return on Equity, the benefit of Tipping Fee should be passed on to the ultimate consumers of electricity as otherwise it would amount to double recovery for the same expenses through electricity tariff and Tipping Fee. Therefore, the Commission directs that the Tipping Fee should be reimbursed to the Distribution Licensee(s) by the generator on receipt of the same under the provisions of its Concession Agreement. The impact of Tipping Fee cannot be directed to be deducted upfront in the tariff as there may be a time gap between the developer's claim for Tipping Fee and the actual receipt from the authorities and the generator should not be subject to financial stress during this period.

92. The Commission is not expressing any opinion on some of the stakeholders' submission that their projects are not entitled to any Tipping Fee. It is the responsibility of the Distribution Licensee(s) to verify the facts and make claims for the implementation of the Commission's directions regarding the reimbursement of Tipping Fee.

### **Issue No. 21: Incentives**

#### **Stakeholders' submission**

93. As the promoter of WtE project incurs higher capital cost in the initial stages than that considered by the Commission for tariff determination, the promoter may be allowed to retain any possible incentives, Viability Gap Funding, interest subsidy or any other means of subsidy from the State and Central Governments for the project to be viable and act as encouragement for development of more projects in the State.

#### **Commission's view**

94. When the cost-plus tariff for electricity generated from waste is determined

under Section 62 of the Electricity Act, 2003 by allowing all the legitimate expenses plus Return on Equity, the benefit of any incentives received from State or Central governments for the power project should be passed on to the ultimate consumers of electricity as otherwise it would amount to double recovery for the same expenses through electricity tariff and incentives.

### FINANCIAL AND TECHNICAL NORMS APPROVED BY THE COMMISSION

95. Based on the above, the financial and technical norms determined by the Commission for RDF based power projects in the State of Telangana achieving COD during the period from 01.04.2020 to 31.03.2024 are as under:

Table 3: Financial and Technical Norms approved by the Commission

S. No.	Parameter	Units	Approved Norm
1.	Capital Cost	Rs. Crore/MW	9
2.	Plant Load Factor (PLF)	%	First Year – 65% Second Year – 75% From Third Year – 80%
3.	Operation and Maintenance (O&M) expenses	%	5% of Capital Cost
4.	Annual escalation on O&M expenses	%	5.72%
5.	Plant Life	Years	20
6.	Land Value (indicative only, included in the Capital Cost)	Rs. Lakhs/MW	5
7.	Salvage Value	%	10%
8.	Depreciation	%	5.83% for first 12 years and 2.50% for the following 8 years
9.	Rate of Return on Equity (Post-tax)	%	16%
10.	Income Tax	-	Income Tax paid by the Generator on the income derived from the power project shall be reimbursed by the Distribution Licensee(s) on submission of challans of payment of Tax to the Income Tax Department.
11.	Interest on long-term loan	%	12%
12.	Loan Tenure	Years	12



S. No.	Parameter	Units	Approved Norm
13.	Debt: Equity ratio	-	70:30
14.	Working Capital components	-	1. O&M expenses for 1 month 2. Maintenance spares @ 1% of the capital cost escalated at 5% per annum 3. Receivables equivalent to 1 month for sale of electricity calculated on normative PLF 4. Fuel Cost for 1 month equivalent to normative PLF
15.	Rate of Interest on Working Capital	%	12.5%
16.	Discount rate	%	13.20%
17.	Auxiliary Consumption	%	11%
18.	Station Heat Rate	kcal/kWh	4000
19.	Gross Calorific Value	kcal/kg	2500
20.	Base Fuel Price	Rs./MT	1800
21.	Annual Fuel Price escalation	%	5%
22.	Incentives	-	Any incentives, State or Central, and not limited to Tipping Fee, received by the Generator to be passed on to the Distribution Licensee(s) procuring power from the Generator

### GENERIC TARIFF DETERMINED BY THE COMMISSION

96. Based on the approved financial and technical norms, the Commission had determined the Levelised Tariff of Rs.7.84 / kWh comprising of Levelised Fixed Cost of Rs.3.42/kWh and Levelised Variable Cost of Rs.4.42/kWh. The Levelised Tariff of Rs.7.84/kWh shall be applicable for the RDF based power projects in the State of Telangana achieving COD during the period from FY 2020-21 to FY 2023-24.
97. The Tipping Fee shall be reimbursed to the Distribution Licensee(s) on receipt of the same by the Generator under the provisions of its Concession Agreement.

### APPLICABILITY

98. This Levelised Tariff of Rs.7.84 / kWh shall be applicable for the RDF

based power projects in the State of Telangana achieving COD during the period from FY 2020-21 to FY 2023-24 for sale of electricity to the Distribution Licensee(s) namely Southern Power Distribution Company of Telangana Limited (TSSPDCL) and / or Northern Power Distribution Company of Telangana Limited (TSNPDCL) from COD of the respective project for a period of 20 years.

***This order is corrected and signed on this the 18<sup>th</sup> day of April, 2020.***

Sd/-	Sd/-	Sd/-
<b>(BANDARU KRISHNAIAH)</b>	<b>(M.D. MANOHAR RAJU)</b>	<b>(T. SRIRANGA RAO)</b>
<b>MEMBER</b>	<b>MEMBER</b>	<b>CHAIRMAN</b>

**ANNEXURE 1 – LIST OF STAKEHOLDERS WHO SUBMITTED WRITTEN  
SUGGESTIONS AND OBJECTIONS**

<b>S. No.</b>	<b>Name of the Stakeholder</b>
1.	M/s ISGEC Heavy Engineering Ltd., A-5, Sector-63, Noida – 201 307 (UP)
2.	M/s CNIM Martin Pvt. Ltd., SKCL Central Square 1, Ground Floor, North Wing, C 28-35, Thiru Vi Ka Industrial Estate, Guindy Chennai, TN, 600 032
3.	M/s JBM Ltd.
4.	M/s Hyquip Systems Ltd., Hyderabad
5.	Sri L. Pundareek, Former Executive Director, BHEL, Hyderabad
6.	Waste to Energy Research & Technology Council-India
7.	M/s Thermax Babcock & Wilcox Energy Solutions Pvt. Ltd., Energy House, D-II Block, Plot No. 38&39, MIDC, Chinchiwad, Pune-411 019
8.	M/s Zenith Energy Services Pvt. Ltd.
9.	M/s Delhi MSW Solutions Ltd.
10.	M/s Hyderabad MSW Energy Solutions Pvt. Ltd., Survey No. 173, Jawahar Nagar, CRPF Road, Near Army College of Dental Sciences, Kapra Mandal, Medchal Dt., Telangana – 500 087
11.	M/s Southern Power Distribution Company of Telangana Ltd., #6-1-50, Corporate Office, Mint Compound, Hyderabad 500 063
12.	M/s Sri Venkateswara Green Power Projects Ltd., 3rd Floor, #5-9-22, My Home Sarovar Plaza, Secretariat Road, Saifabad, Hyderabad – 500 063
13.	M/s Ramky Enviro Engineers Limited, 13th Floor, Ramky Grandiose, Ramky Towers, Gachibowli, Hyderabad, Telangana – 500 032
14.	M/s Triveni Turbine Ltd., 12-A, Peenya Industrial Area, Bangalore – 560 058
15.	M/s GJ Nature Care & Energy Pvt. Ltd., Door No. 10/63-C1, Sarayu Complex, Seaport – Airport Road, Kakkanad, Kochi – 682 030
16.	Sri K. Sreenivasa Rao
17.	M/s Greensol Power Systems Pvt. Ltd., #995, Service Road, RPC Layout, Vijayanagar, Bangalore – 560 040
18.	M/s Avant-Grade Systems and Controls (P) Ltd., No. 67A, Porur Kundrathur Road, Porur, Chennai – 600 116
19.	M/s Northern Power Distribution Company of Telangana Ltd., Corporate Office, Vidyut Bhavan, Warangal



**ANNEXURE 2 – COMPUTATIONS OF LEVELISED TARIFF FOR RDF BASED POWER PROJECTS**

Computation of Levelised Tariff for RDF based power projects:																					
Parameter	Units	Value																			
Installed Capacity	MW	1																			
Useful life	Years	20																			
Capital Cost per MW	Rs. Crore	9.00																			
Land value per MW	Rs. Crore	0.05																			
Debt	%	70%																			
Equity	%	30%																			
O&M expenses per MW for 1st year	Rs. Crore	0.45																			
Annual escalation for O&M expenses	%	5.72%																			
Depreciation rate																					
1-12 years	%	5.83%																			
13th year onwards	%	2.50%																			
Loan tenure	Years	12																			
Interest on term loan	%	12.00%																			
Interest on working capital	%	12.50%																			
Rate of Return on Equity	%	16%																			
Discount Factor	%	13.20%																			
PLF																					
1st year	%	65%																			
2nd year onwards		75%																			
3rd year onwards	%	80%																			
Auxiliary consumption	%	11%																			
Station Heat Rate	kcal/kWh	4000																			
Gross Calorific Value	kcal/kg	2500																			
Base Fuel Cost	Rs./MT	1800																			
Annual fuel cost escalation	%	5%																			
Particulars	Units	Year																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Gross Generation	MU	5.69	6.57	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01	7.01
Net Generation	MU	5.07	5.85	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24	6.24
<b>Fixed Cost components</b>																					
O&M expenses	Rs. Lakh	45.00	47.57	50.30	53.17	56.21	59.43	62.83	66.42	70.22	74.24	78.48	82.97	87.72	92.74	98.04	103.65	109.58	115.85	122.47	129.48
Depreciation	Rs. Lakh	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50	52.50
Interest on term loan	Rs. Lakh	72.45	66.15	59.85	53.55	47.25	40.95	34.65	28.35	22.05	15.75	9.45	3.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	Rs. Lakh	7.31	8.08	8.63	8.93	9.23	9.56	9.91	10.28	10.68	11.09	11.53	12.00	12.21	12.80	13.42	14.07	14.76	15.48	16.23	17.03
Return on Equity	Rs. Lakh	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20	43.20
<b>Total Fixed Cost</b>	<b>Rs. Lakh</b>	<b>220.46</b>	<b>217.51</b>	<b>214.48</b>	<b>211.35</b>	<b>208.40</b>	<b>205.64</b>	<b>203.09</b>	<b>200.75</b>	<b>198.65</b>	<b>196.78</b>	<b>195.17</b>	<b>193.82</b>	<b>165.63</b>	<b>171.24</b>	<b>177.16</b>	<b>183.42</b>	<b>190.03</b>	<b>197.02</b>	<b>204.41</b>	<b>212.21</b>
<b>Per unit Fixed Cost</b>																					
O&M expenses	Rs./kWh	0.89	0.81	0.81	0.85	0.90	0.95	1.01	1.06	1.13	1.19	1.26	1.33	1.41	1.49	1.57	1.66	1.76	1.86	1.96	2.08
Depreciation	Rs./kWh	1.04	0.90	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Interest on term loan	Rs./kWh	1.43	1.13	0.96	0.86	0.76	0.66	0.56	0.45	0.35	0.25	0.15	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	Rs./kWh	0.14	0.14	0.14	0.14	0.15	0.15	0.16	0.16	0.17	0.18	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.25	0.26	0.27
Return on Equity	Rs./kWh	0.85	0.74	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69	0.69
<b>Total Fixed Cost</b>	<b>Rs./kWh</b>	<b>4.35</b>	<b>3.72</b>	<b>3.44</b>	<b>3.39</b>	<b>3.34</b>	<b>3.30</b>	<b>3.26</b>	<b>3.22</b>	<b>3.18</b>	<b>3.15</b>	<b>3.13</b>	<b>3.11</b>	<b>2.66</b>	<b>2.75</b>	<b>2.84</b>	<b>2.94</b>	<b>3.05</b>	<b>3.16</b>	<b>3.28</b>	<b>3.40</b>
Fuel Cost	Rs./MT	1800	1890	1985	2084	2188	2297	2412	2533	2659	2792	2932	3079	3233	3394	3564	3742	3929	4126	4332	4549
Specific fuel consumption	kg/kWh	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
Variable Cost	Rs. Lakh	163.99	198.68	222.52	233.64	245.33	257.59	270.47	284.00	298.20	313.11	328.76	345.20	362.46	380.58	399.61	419.59	440.57	462.60	485.73	510.02
<b>Variable Cost</b>	<b>Rs./kWh</b>	<b>3.24</b>	<b>3.40</b>	<b>3.57</b>	<b>3.75</b>	<b>3.93</b>	<b>4.13</b>	<b>4.34</b>	<b>4.55</b>	<b>4.78</b>	<b>5.02</b>	<b>5.27</b>	<b>5.53</b>	<b>5.81</b>	<b>6.10</b>	<b>6.41</b>	<b>6.73</b>	<b>7.06</b>	<b>7.42</b>	<b>7.79</b>	<b>8.18</b>
<b>Total Cost</b>	<b>Rs./kWh</b>	<b>7.59</b>	<b>7.12</b>	<b>7.01</b>	<b>7.13</b>	<b>7.27</b>	<b>7.43</b>	<b>7.59</b>	<b>7.77</b>	<b>7.97</b>	<b>8.18</b>	<b>8.40</b>	<b>8.64</b>	<b>8.47</b>	<b>8.85</b>	<b>9.25</b>	<b>9.67</b>	<b>10.11</b>	<b>10.58</b>	<b>11.06</b>	<b>11.58</b>
<b>Levelised Tariff</b>																					
Discount Factor		1.00	0.88	0.78	0.69	0.61	0.54	0.48	0.42	0.37	0.33	0.29	0.26	0.23	0.20	0.18	0.16	0.14	0.12	0.11	0.09
<b>Levelised Fixed Cost</b>	<b>Rs./kWh</b>											<b>3.42</b>									
<b>Levelised Variable Cost</b>	<b>Rs./kWh</b>											<b>4.42</b>									
<b>Levelised Total Cost</b>	<b>Rs./kWh</b>											<b>7.84</b>									