SMP – 35 /2021

Madhya Pradesh Electricity Regulatory Commission

5th Floor, "Metro Plaza", Bittan Market, Bhopal - 462016

PRESENT:

S.P.S Parihar, Chairman

Mukul Dhariwal, Member

Shashi Bhushan Pathak, Member

IN THE MATTER OF:

DETERMINATION OF TARIFF FOR PROCUREMENT OF POWER BY DISTRIBUTION LICENSEES GENERATED FROM MUNICIPAL SOLID WASTE (MSW) BASED POWER PROJECTS IN THE STATE OF MADHYA PRADESH

September 2021

ORDER

(Passed on this day of 21 .09. 2021)

1 Preamble

In exercise of the powers conferred under Sections 61(a), (h) and (i), 62 (1) (a), and 86 (1) (a), (b), and (e) of the Electricity Act, 2003, and all other powers enabling it in this behalf, the Madhya Pradesh Electricity Regulatory Commission (MPERC or 'the Commission') determines the tariff for procurement of power by Distribution Licensees from Municipal Solid Waste (MSW) based power projects to be commissioned during the control period of this order.

The Commission has issued the previous generic tariff order for procurement of power from MSW based power projects in Madhya Pradesh on 29th June 2016 (in SMP 10/2016). The control period of the aforesaid tariff order was up to 31 March 2019 which was subsequently extended by the Commission till issuance of further order in the subject matter.

The Commission had duly considered various provisions of the following legislative /Policy documents, while determining tariff in this order:

1.1 Legislative and Policy Provisions

Electricity Act, 2003

The following provisions of the Electricity Act 2003 provide the enabling legal framework for promotion of Renewable Sources of energy by the State Electricity Regulatory Commissions (SERCs):

Section 61 (h) of the Act provides that, while specifying the terms and conditions of determination of tariff, the Commission shall be guided by the objective of promotion of cogeneration and generation of electricity from renewable sources of energy.

Section 62 (1) (a) of the Act provides for determination of tariff for supply of electricity by a generating company to a distribution licensee.

Section 86 (1) (b) of the Act regulates the procurement process of electricity by the distribution licensees as under: "regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;"

Section 86 (1) (e) of the Act mandates promotion of co-generation and generation of electricity from renewable sources of energy: "Promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee."

National Electricity Policy (NEP)

Clause 5.10 & Clause 5.12 of the NEP stipulates several conditions for promotion and harnessing of renewable energy sources. The salient features of the said provisions of NEP are reproduced below.

5.10.5: *Setting up of municipal solid waste energy projects in urban areas and recovery of energy from industrial effluents will also be encouraged with a view to reducing environmental pollution apart from generating additional energy*

5.12.1*: Non-conventional sources of energy being the most environment friendly, there is an urgent need to promote generation of electricity based on such sources of energy. For this purpose, efforts need to be made to reduce the capital cost of projects based on non-conventional and renewable sources of energy. Cost of energy can also be reduced by promoting competition within such projects. At the same time, adequate promotional measures would also have to be taken for development of technologies and a sustained growth of these sources.*

Tariff Policy (TP), 2016

In compliance with Section (3) of the Electricity Act 2003, the Central Government has notified the revised tariff policy on 28 January 2016. The tariff policy elaborates the role of regulatory commissions, the mechanism for promoting renewable energy, the timeframe for implementation, etc. Clause 6.4 of the tariff policy addresses various aspects associated with promoting and harnessing renewable sources of energy generation including the Waste to Energy power projects. The provisions stated under Clause 6.4 of Tariff Policy are given below.

"(1) Pursuant to provisions of section 86(1)(e) of the Act, the Appropriate Commission shall fix a minimum percentage of the total consumption of electricity in the area of a distribution licensee for purchase of energy from renewable energy sources, taking into account availability of such resources and its impact on retail tariffs. Cost of purchase of renewable energy shall be taken into account while determining tariff by SERCs. Long term growth trajectory of

Renewable Purchase Obligations (RPOs) will be prescribed by the Ministry of Power in consultation with MNRE.

(i)……

(ii) Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste-to-Energy 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 under Section 62 of the Act ………………………………………………………………… ……………………………………………………………………………………………

1.2 MPERC RE Tariff Regulations, 2017

MPERC (Terms and Conditions of determination of tariff for sale of energy from RE sources) Regulations, 2017 has been notified on 07th July 2017 which will remain in force for 5 years, unless reviewed earlier or extended. The general tariff related provisions provided in Regulations, applicable for all RE technologies are summarized below:

- Applicability – apply in all cases where the tariff is to be determined by the Commission under Section 62 read with Section 86 of the Act.
- Tariff determined for the projects commissioned during the control period, shall continue to be applicable for the entire duration of the 'useful life' as specified in these Regulations.
- Tariff structure would be fixed and /or variable cost, as applicable.
- Generic tariff will be determined on levellised basis on useful life, and discount factor is the post-tax weighted average cost of capital.
- The Commission shall indicate in the order whether the subsidy is considered or not.
- The preferential tariff as determined by the Commission for RE technologies/sources other than Solar shall also be subject to bidding after the date of issue of notification by the Central Government in terms of Tariff Policy, 2016.

Apart from above general tariff related provision, the MPERC RE Regulations, 2017 have following technology specific provisions for determination of generic tariff for procurement of electricity from MSW based power projects.

- **Clause 2 (k)** – Generation from MSW means energy generation from incineration of Municipal Solid Waste.
- **Clause 4 (g)** – Eligibility criteria for MSW power project – Based on incineration of Municipal Solid Waste as approved by MNRE.

- **Technology specific parameters for MSW power projects**
  - **Capital cost**: The normative capital cost for the MSW power projects shall be Rs 1500 Lakh/MW during the control period.
  - **Plant Load Factor**: During 1st year of operation – 65%
From 2nd year onward – 75%
  - **Auxiliary Consumption**: The auxiliary consumption factor shall be 15% of the Gross Generation for tariff determination.
  - **O&M expenses**: Normative O&M expenses during first year of operation shall be 5% of capital cost and shall be escalated at the rate of 5.72% during balance useful life of the plant.
  - **Fuel costs**: Fuel cost in MSW based projects shall not be considered. Therefore, related norms like Station Heat Rate, Fuel cost escalation, Gross Calorific Value etc are not applicable.
  - **Working capital components:** Fuel cost for four months, O&M expenses for one month, receivable equal to two months of energy charges for sale of electricity calculated on target PLF and maintenance spare @ 15% of O&M expenses.

2 Procedural History

The Commission issued an Approach Paper elaborating the principles, methodology and various financial and operating parameters for determination of tariff for procurement of power from MSW based power projects by the distribution licensees in the state. The Commission invited, comments/suggestions/objections from the Stakeholders/ Interested persons on the Approach Paper through Public Notice published in the subject matter in the Raj Express – Indore (Hindi), The Hitvad- Jabalpur (English) and Patrika– Bhopal (Hindi) on 23.07.2021, in addition to uploading the same on the Commission's website.

Public Hearing in this matter was held on 24.08.2021 to hear the comments/suggestions/ Objections of Stakeholders on the Approach Paper. The Commission has received written comments / suggestions/ objections from only one stakeholder on the Approach paper. The stakeholder who offered comments/suggestions/objections also participated in the public hearing and made oral submission on his suggestions /comments/objections, offered by him in writing before the Commission.

3 Tariff framework for procurement of power from MSW based power projects

3.1 Tariff Structure and Design

Proposed in Approach Paper

Clause 6.4 (1) (ii) of Tariff Policy mentioned that Distribution Licensee(s) shall compulsorily procure 100% power produced from all the Waste-to-Energy 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 under Section 62 of the Act."

MPERC RE Tariff Regulations, 2017 provides that generic tariff shall normally be determined on levellised basis. Levellisation shall be carried out for the 'useful life' of the renewable energy project. Further, MPERC RE Tariff Regulations, 2017 provides for generic tariff determination for MSW based power projects using incineration process without fuel cost component.

In case any developer intends to opt for any other technology configuration for installation of MSW based power project then the Commission shall determine project specific tariff as per provisions under MPERC RE tariff Regulations, 2017.

Considering above regulatory provisions, the Commission in the Approach Paper proposed to determine single part levellised tariff on Cost- plus basis. Fixed cost component is to be determined on following basis: -

a. Capital cost;
b. Debt: Equity Ratio
c. Return on equity;
d. Interest on loan capital;
e. Depreciation;
f. Interest on working capital;
g. O&M expenses

Comments/Suggestions

The Commission has not received any comments / suggestions from the stakeholder in this regard.

Commission's View

The Commission decides to determine single part levellised tariff on Cost-plus basis over the useful life of the plant. The MSW based project owner / generator opting for mass incineration / RDF based incineration shall be allowed to recover the fixed cost on the basis of actual energy generation as per the levellised tariff specified by the Commission.

In case any developer intends to opt for any other technology configuration for installation of MSW based power project then the Commission shall determine project specific tariff as per provisions under MPERC RE Tariff Regulations, 2017.

The electricity generation over and above the normative Plant Load Factor specified in this order shall be dealt according to the 'Treatment for Over-generation' provided under Regulation 11 of CERC's RE Tariff Regulations, 2020, which provides as under:

"In case a renewable energy project, in a given year, generates energy in excess of the capacity utilization factor or plant load factor, as the case may be, specified under these Regulations, the renewable energy project may sell such excess energy to any entity, provided that the first right of refusal for such excess energy shall vest with the concerned beneficiary. In case the concerned beneficiary purchases the excess energy, the tariff for such excess energy shall be 75 percent of the tariff applicable for that year".

3.2 Useful Life of Plant

Proposed in Approach Paper

The Commission in the Approach Paper proposed 25 years as useful life for the MSW based power projects for tariff determination purpose.

Comments/ Suggestions

The Commission has not received any suggestions/comments from the stakeholders in this regard.

Commission's View

CERC in its RE Tariff Regulations, 2020 has considered the project life for MSW based power projects as 25 years.

In view of aforesaid, the Commission decides to consider 25 years as useful life for the MSW based power projects for tariff determination in this order.

3.3 Control Period

Proposed in Approach Paper

The Commission in the Approach Paper has proposed that the control period of the tariff order for MSW based power project shall commence from the date of issuance of the new tariff order and shall be valid up to 31 March 2024 (i.e., end of FY 2023-24).

Comments/ Suggestions

The Commission has not received any suggestions/comments from the stakeholders in this regard.

Commission's View

The Commission decides that the Control period of this tariff order shall commence from the date of issue of order till 31st March 2024 (i.e., end of FY 2023-24) unless reviewed earlier or extended.

3.4 Tariff Period

Proposed in Approach Paper

The Commission in the Approach Paper has proposed tariff period as 25 years which is equivalent to useful life of the MSW based power projects for tariff determination purpose.

Comments/ Suggestions

The Commission has not received any suggestions/comments from the stakeholders in this regard.

Commission's View

The Commission decides to consider Tariff period equal to useful life of plant i.e., 25 years in this order.

3.5 Eligibility Criteria

Proposed in Approach Paper

In the Approach Paper, it was proposed that the MSW based power projects using incineration technology and complying with the emission standards specified in Solid Waste Management Rules, 2016 and to be commissioned during new control period from the date of issue of this order to 31/03/2024, shall be eligible to sell power to distribution licensees at the tariff determined by the Commission under this tariff order for useful life of the project.

Comments/ Suggestions

The Commission has not received any suggestions/comments from the stakeholders in this regard.

Commission's View

The Commission decides to retain the eligibility criteria as proposed in the Approach Paper in this order.

3.6 **Benchmark Capital Cost for Tariff Determination**

Proposed in Approach Paper

The Commission in the Approach Paper proposed to fix benchmark capital cost of **Rs 18.50 Cr/MW** for MSW based power projects for tariff determination in the control period of this tariff order.

The benchmark capital cost considered by the Commission in the previous tariff order dated 29th June 2016 (SMP 10/2016) was Rs 15 Cr/MW.

In order to arrive at benchmark capital cost for the MSW based power projects to be commissioned in new control period, the Commission has gone through the MSW based power project's capital cost considered by CERC and other SERCs in their recent RE Regulations/ tariff orders. The Commission has also observed that Mass incineration/ Refuse Derived Fuel incineration based technologies are emerging as preferred option for MSW to energy projects in the country. Most of the projects commissioned and under pipeline in the country for which the concession agreements have been signed are based on incineration technology.

The Commission has also looked into the change in WPI of steel and E&M during the year 2017 to 2020, the extended control period of previous tariff order and corresponding growth rate based on the data published by the Office of Economic Advisor, Ministry of Commerce, and Industry, GOI.

Comments/ Suggestions

The stakeholder submitted that the CERC RE Tariff Regulations, 2020 do not specify capital cost norms for MSW based power projects. The stakeholder suggested for upward revision of capital cost proposed in the Approach paper.

Commission's View

The CERC RE Tariff Regulations, 2020 recommends specifying the normative capital cost based on the prevailing market trends. The normative capital cost benchmark of Rs 18.50 Cr/MW for MSW projects proposed in the Approach Paper was based on analysis of growth rate in previous control period as well as study of approach followed by other SERC in respective tariff orders / Regulations.

In view of aforesaid, the Commission decides to fix the benchmark capital cost of Rs **18.50** Cr/MW for MSW based power projects for tariff determination for the control period in this order. The capital cost is inclusive of the cost towards i) plant and machinery (including pre-processing equipment), (ii) land cost (iii) civil works, (iv) evacuation infrastructure and (v) cost towards Pollution Control Equipment for complying the emission standards specified in the Solid Waste Management Rules, 2016

3.7 **Debt Equity Ratio**

Proposed in Approach Paper

The Commission has considered the debt-equity ratio of 70:30 in the Approach Paper. The MPERC RE Tariff Regulations, 2017 provides normative debt-equity ratio is 70:30. The CERC and SERCs are also considered debt-equity ratio as 70:30 for tariff determination purpose. The Tariff policy, 2016 also mentions the same ratio for the tariff determination purpose.

Comments/Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders in this regard.

Commission's View

The Commission decides to consider the debt-equity ratio of 70:30 for tariff determination purpose, which is in line with the MPERC RE Tariff Regulations, 2017 as well as CERC RE Tariff Regulations, 2020 and provisions in Tariff Policy 2016.

3.8 **Return on Equity**

Proposed in Approach Paper

MPERC RE Tariff regulations, 2017 provides for the Return on Equity as 20% on Pretax basis. The Commission while proposing RoE in the Approach Paper reviewed the current market practices and norms followed by CERC and other SERCs. The CERC RE Tariff Regulations, 2020 provides the normative Return on Equity as 14%. The normative Return on Equity is to be grossed up by the applicable notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the applicable notified Corporate Tax rate for the remaining Tariff Period. Further, in States like Gujarat, Rajasthan, and Kerala, Bihar, the rate of RoE in the case of RE projects is allowed at 14%.

Accordingly, the Commission has proposed a normative Return on Equity as 14%. The normative Return on Equity to be grossed up by the applicable notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the applicable notified Corporate Tax rate for the remaining Tariff Period.

Comments/Suggestions

The stakeholder has submitted to consider normative RoE of 20% for MSW project tariff determination purpose. He referred the provisions under MPERC Generation Regulations, 2020 in this regard.

Commission's View

CERC RE Tariff Regulations, 2020 specifies 14% RoE to be grossed up as per applicable tax rate for the Renewable Energy projects including MSW based power projects. Other SERCs in recent past have also considered 14% RoE for RE tariff determination purpose The Commission observed that post tax 14 % RoE grossing up by the applicable notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the applicable notified Corporate Tax rate for the remaining Tariff Period is reasonable to strike a balance between the generator and procurer. In view of the above, the Commission decides to consider a normative Return on Equity as 14%. The normative Return on Equity shall be grossed up by the applicable notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and by the applicable notified Corporate Tax rate for the remaining Tariff Period in this order.

3.9 Loan Repayment Period

Proposed in Approach Paper

The Commission in the Approach Paper proposed to consider the loan repayment equal to 15 years for tariff determination in this control period.

The MPERC RE Tariff Regulations, 2017 provides for the loan repayment period of 10 years. However, it has been noted that the CERC in its RE Tariff Regulations, 2020 has recommended the loan repayment period as 15 years. Presently, the RE project proponents are getting loan for 15 years' repayment period. In view of aforesaid, the loan repayment equal to 15 years is proposed for tariff determination in this control period.

Comments/ Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders in this regard.

Commission's View

In view of above, the Commission decides to consider the loan repayment period equal to 15 years for tariff determination purpose in this order which is consistent with CERC RE Tariff Regulations 2020 and present market conditions.

3.10 Interest on Term Loan

Proposed in Approach Paper

MPERC RE Tariff Regulations, 2017 provides that the Commission would decide the interest on term loan in the tariff order. CERC RE Tariff Regulations, 2020 has provided the norms of normative interest rate as two hundred (200) basis points above the average State Bank of India Marginal Cost of Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months**.** Accordingly, in the approach paper interest on term loan for tariff determination was normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months i.e., SBI MCLR rate of 7.0% (average of last six months) plus 200 basis points i.e. 9.0% (7.0% + 2.0%).

Comments/Suggestions

The stakeholder submitted that the interest on term loan proposed for MSW tariff determination in the Approach Paper is on lower side and not as per present market conditions. The stakeholder further submitted that the Commission may consider actual interest rate as specified by Bank /FIs while lending loan the MSW developers.

Commission's View

The normative Interest rate on term loan has been proposed by Commission based on the norms of normative interest rate of two hundred (200) above the average State Bank of India Marginal Cost of Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months as recommended in CERC RE Tariff Regulations, 2020. Same norms are being followed by most of the SERCs for fixing the normative interest on term loan. Actual interest rate offered by IREDA and PFC for lending to RE project have also been examined and found to be in same range.

In view of above, the Commission preferred to follow CERC norms based on SBI MCLR rate (one-year tenor) prevalent during the last available six months as elaborated below:

SBI MCLR (one-year tenure) for last six months

Effective rate	Interest rate
10 January 2021	7.0%
10 December 2020	7.0%
10 November 2020	7.0%
10 October 2020	7.0%
10 September 2020	7.0%
10 August 2020	7.0%

The Commission decides to consider a normative interest on loan equal to 9% considering SBI MCLR rate of 7.0% (average of last six months) plus 200 basis points for tariff determination purpose for the control period of this order.

3.11 Rate of Depreciation

Proposed in Approach Paper

MPERC RE Tariff Regulations, 2017 provides that the capital cost of the asset admitted by the Commission would be the base value for the purpose of determination of depreciation. Further, the salvage value of the asset is considered as 10%, and depreciation is allowed up to a maximum of 90% of the capital cost of the asset. The Commission in the Approach Paper proposed depreciation rate of 4.67% per annum for the first 15 years and the remaining depreciation is spread over the remaining useful life of the plant. This is in line with the method followed by CERC and other SERCs wherein the depreciation is linked with the loan repayment period.

Comments/ Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders in this regard.

Commission's View

In view of above, the Commission decides to retain the depreciation rate of 4.67% per annum for the first 15 years and then the remaining depreciation (20%) to be spread over the remaining useful life of 10 years as proposed in the Approach paper.

3.12 Working Capital

Proposed in Approach Paper

The MPERC RE Tariff Regulations, 2017 provides the following components of working capital for MSW based power projects:

i) O&M expenses for 1 month
ii) Receivables equivalent to 2 months of energy charges
iii) Maintenance spares @ 15% of O&M expenses.
iv) Fuel cost for four months equivalent to normative PLF.

Since Fuel is available free of cost to developer, no fuel cost is considered as component of working capital. Other SERCs like CSERC, TNERC, BERC and HERC have also followed similar approach while deciding working capital requirements for MSW based power projects. In view of the above, it is proposed to consider working capital components as per MPERC RE Tariff Regulations, 2017 excluding fuel cost component.

Comments/ Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders in this regard.

Commission's View

The commission decides to consider the following components of working capital for tariff determination purpose:

i) O&M expenses for 1 month
ii) Receivables equivalent to 2 months of energy charges
iii) Maintenance spares @ 15% of O&M expenses.

3.13 Interest on Working Capital

Proposed in the Approach Paper

CERC RE Tariff Regulations, 2020 has provided the norms for interest on working capital as three hundred (350) basis points above the average State Bank of India Marginal Cost of Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months**.** Accordingly, in the Approach Paper interest on working capital for tariff determination was proposed as SBI MCLR rate of 7.0% (average of last six months) plus 300 basis points i.e., 10.5% (7.0% + 3.5%).

Comments / Suggestions

The Commission has not received any comments/ suggestions from the stakeholders in this regard.

Commission's View

The Commission decides to consider the interest on working capital for tariff determination as 10.5% i.e., 350 basis points above SBI MCLR rate of 7.0% (average of last six months), similar to CERC RE tariff Regulations, 2020 in this order.

3.14 Operations and Maintenance Cost

Proposed in Approach Paper

The MPERC RE Tariff Regulations, 2017 defines Operations and Maintenance (O&M) expenses as the expenditure incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurances, and overheads.

The Commission in the approach paper has proposed to fix O&M cost for MSW based Power projects as 5% of the capital cost during first year of operation with an annual escalation factor of 3.84% over the useful life of the plant.

The CERC in its RE Tariff Regulations, 2020 provides for annual escalation factor of 3.84% for O&M cost escalation over useful life of plant. This has been derived by CERC based on changes in WPI and CPI during the last five years (FY 2014-15 to FY 2018-19).

Comments/ Suggestions

The Commission has not received any suggestions/comments from the stakeholders in this regard.

Commission's View

The Commission in its earlier order dated 29th June 2016 had considered O&M expenses at the rate of 5% of the Capital Cost with annual escalation of 5.72 %. It has been observed that in CERC RE Regulations, 2020, the annual escalation rate is revised to 3.84% with respect to change in WPI and CPI during last 5 years. In view of this, the Commission decides to fix normative O&M cost as 5% of the capital cost during first year of operation with an annual escalation at the rate of 3.84% over the useful life of the plant for the projects commissioned during the control period of this order.

3.15 **Plant Load Factor**

Proposed in Approach Paper

The Commission in the Approach Paper has proposed to consider plant load factor as 65% for 1st year including stabilization period of 6 months and 75% from 2nd year onwards for tariff determination purpose.

Comments/ Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders.

Commission's View

MPERC RE Tariff Regulations, 2017 as well as the CERC RE Tariff Regulations, 2020 provides for a normative PLF of 65% for 1st year including stabilization period of 6 months and 75% from 2nd year for the MSW power project tariff determination purpose. Other SERC's like BERC, HERC, CSERC, TNERC has also followed the same approach while specifying PLF for the MSW based power projects. In view of above, the Commission decides to consider the normative Plant Load Factor of 65% for 1st year including stabilization period of 6 months and 75% from 2nd year onwards for the MSW based power project tariff determination purpose in this order.

3.16 Auxiliary Consumption

Proposed in Approach Paper

The Commission in the Approach Paper has proposed normative auxiliary consumption at 15 % of gross generation for tariff determination purpose, similar to CERC RE Tariff Regulations, 2020.

The Commission in its earlier tariff order dated 29th June 2016 (SMP 10 /2016) had considered the same normative value for the auxiliary consumption. The CERC RE Tariff Regulations, 2020 as well as MPERC RE Tariff Regulations, 2017 provides for auxiliary consumption equal to 15% of gross generation.

Comments/ Suggestions

The Commission has not received any Comments/ suggestions from the stakeholders.

Commission's View

The MSW is heterogeneous in nature which require to be processed before putting into incinerator. Considering this, the Commission decides to fix the normative value of auxiliary consumption as 15% of the gross generation for tariff determination purpose for the control period in this order, which is also in line with the MPERC RE Tariff Regulations, 2017 and CERC RE Tariff Regulations, 2020.

3.17 Discount Factor

Commission's View

The MPERC RE Tariff Regulations, 2017 define the discount factor as post-tax weighted average cost of capital (WACC). The CERC RE tariff Regulations, 2020 also provides for same definition of discount factor. In line with above provisions, the Commission has computed the discount factor as given below:

WACC = Cost of Debt + Cost of Equity
Cost of Debt =0.70 x (Market Rate of Interest) x (1- Corporate tax)
Cost of Equity = 0.30 x Return on Equity (i.e., normative 14%)

Interest Rate considered for the loan component (i.e., 70% of the capital cost) is 9%. For the equity component (i.e., 30% of the capital cost), the rate of Return on Equity (ROE) is considered at a post-tax rate of 14%, as a normative factor. Further, the Corporate Tax rate has been considered as 34.94% (30% for domestic companies, plus applicable surcharge (12%) and Health and Education Cess (4%)). The computation is given below:

Discount Factor (WACC) = [{(0.70 x 9%) x (1 – 34.94%)} + (0.30 x14%)] = 8.30%

In view of above, the Commission decides to consider the discount factor as 8.30% for levellized tariff calculation in this order.

3.18 Other Comments/ Suggestions/ Objections

Comments/Suggestions

The stakeholder has submitted to consider transportation cost of fuel for MSW tariff determination purpose. The stakeholder refer regulation 68(2) of CERC RE Tariff Regulations, 2020 in support of his comment.

Commission's View

Regulation 68(2) of CERC RE Tariff Regulations, 2020 is related to Project Specific Tariff determination and not relevant for present case of generic tariff determination. As per the provision in Action Plan of MSW Management in MP notified by Urban Development and Housing Department, GoMP, the concessioner (project developer) is eligible for receiving tipping fee from the urban local body for collection and processing of waste. In view of the above, the Commission therefore decides to not consider any transportation cost of fuel in MSW tariff determination.

4 Treatment for Subsidy or Incentive received from Central / State Government

Proposed in Approach Paper

The MPERC RE Tariff Regulations, 2017 provides that the Commission shall indicate in the tariff order whether any subsidy or incentive offered by the Central or State Government is taken into consideration or not.

It has been noted that the Central Financial Assistance (CFA) of Rs 500 lakh / MW is available from the Ministry of New and Renewable Energy (MNRE), Government of India to the eligible MSW based power projects (as per MNRE File No. 2/222/2016-17-WTE, dated 28.02.2020). This is significant amount which is almost 25-30% of the capital cost. Hence, for clarity, it has proposed determine to tariff with and without factor in the subsidy component.

The Urban Administration and Development Dept, GoMP should inform the Commission, in case the project proponent avail incentive / benefit from other schemes of Central Government under Swatch Bharat Mission / Ministry of Housing and Urban Affairs. In such instances, the Commission shall issue separate order indicating the applicable tariff for sale of electricity considering actual subsidy/ incentive received by the project proponent.

To factor in the benefit of Accelerated depreciation available from central government, the Commission proposed to specify separate tariff by taking into account the accelerated depreciation (AD) benefit as well as without considering the AD benefit.

Following principles was proposed to determine the per-unit AD benefit:

As per the current provisions under Income Tax Act, RE project owners can avail accelerated depreciation at the rate of 40% in the first year on a **written-down value (WDV)** basis. In addition to this 40% depreciation, an additional depreciation of 20% in the initial year is extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (iia) of the Income Tax Act, 1961. With this, the projects can avail 60% depreciation in the first year of commissioning. From the second year onwards, depreciation at the rate of 40% on written-down-value (WDV) is available. The Commission has considered the above depreciation rate while calculating per unit AD benefit in this order.

Following principles have been considered for ascertaining the Income Tax benefit on account of accelerated or additional depreciation for the purpose of tariff determination:

a. The assessment of benefit shall be based on normative Capital Cost, book depreciation rate of 5.28% per annum, accelerated/ additional depreciation rate (i.e., 60% in the first year and 40% from Second year onwards) as per the relevant provisions of the Income Tax Act and the Corporate Income Tax rate.
b. The Capitalisation of RE Projects for the full financial year;
c. The Per-unit benefit shall be derived on levellised basis at a discounting factor equivalent to the post-tax weighted average cost of capital.

Comments/Suggestions

The Commission has not received any comments/ suggestions from the stakeholders in this regard.

Commission's View

The Commission decides to determine tariff with and without considering the subsidy /incentive available to MSW based project proponent from the MNRE, GoI vide its administrative approval MNRE File No. 2/222/2016-17-WTE, dated 28.02.2020. The MPPMCL shall confirm the receipt of such subsidy / incentive to MSW based project proponent from the State Nodal Agency / Urban Administration and Development Dept., GoMP and accordingly execute the Power Purchase Agreement as per applicable Tariff specified in this order.

The Urban Administration and Development Dept, GoMP shall inform the Commission, in case the project proponent avail incentive / benefit from other schemes of Central Government under Swatch Bharat Mission / Ministry of Housing and Urban Affairs. In such instances, the Commission shall issue separate order indicating the applicable tariff for sale of electricity considering actual subsidy/ incentive received by the project proponent.

To factor-in the benefit of Accelerated depreciation available from central government, the Commission decides to specify separate tariff by taking into account the accelerated depreciation (AD) benefit as well as without considering the AD benefit.

Following principles shall be adopted to determine the per-unit AD benefit:

As per the current provisions under Income Tax Act, RE project owners can avail accelerated depreciation at the rate of 40% in the first year on a written-down value (WDV) basis. In addition to this 40% depreciation, an additional depreciation of 20% in the initial year is extended to new assets acquired by power generation companies vide amendment in the section 32, sub-section (1) clause (iia) of the Income Tax Act, 1961. With this, the projects can avail 60% depreciation in the first year of commissioning. From the second year onwards, depreciation at the rate of 40% on WDV is available.

Following principles shall be adopted for ascertaining the Income Tax benefit on account of accelerated or additional depreciation for the purpose of tariff determination:

a. The assessment of benefit shall be based on normative Capital Cost, book depreciation rate of 5.28% per annum, accelerated/ additional depreciation rate (i.e., 60% in the first year and 40% from Second year onwards) as per the relevant provisions of the Income Tax Act and the Corporate Income Tax rate.
b. The Capitalisation of RE Projects for the full financial year;
c. The Per-unit benefit shall be derived on levellised basis at a discounting factor equivalent to the post-tax weighted average cost of capital.

It is further clarified that in case the generating company is not claiming accelerated depreciation benefit, the Power Purchase Agreement entered into with the generating company shall include an undertaking by the generating company with certificate from the Chartered Accountant indicating that accelerated benefit would not be availed for the project.

Provided also that if accelerated or higher depreciation benefit has been claimed despite submission of the undertaking then the MPPMCL / distribution licensee shall be entitled recover amount wrongly claimed along with penal charges at the rate of 1.50% per month calculated on daily basis.

5 Computation of Tariff for MSW based Power Projects

The operating and financial parameters considered by the Commission for tariff determination for the control period in this order are as given below:

Parameters for tariff determination of MSW based Power projects

Parameters	MSW based power Projects
Project Cost and O&M	
Total Project Cost (Rs. Lakh/MW) Without Subsidy	1850
Project Life in Years	25
MNRE Subsidy (Rs. Lakh/MW)	500
Total Project Cost (Rs. Lakh/MW) With Subsidy	1350
Normative O&M Cost for First Year (Rs. Lakh/MW)	5% of Project Cost (Rs 92.50 Lakhs/MW)
Escalation in O&M (per annum from 2nd year)	3.84%
Performance Parameters	
PLF	65 % in the First Year and 75% from 2nd year onwards
Auxiliary Consumption	15 %
Financial Parameters	
Debt-Equity Ratio	70:30
Term of Loan in Years	15
Interest on Term Loan	9 %
Interest on Working Capital	10.5 %
Depreciation	4.67% (up to 15 years) 2% (16 to 25 years)
Base rate of Return on Equity	14 %
Minimum Alternate Tax (MAT)	17.47%
Corporate Tax rate	34.94%
Discount Factor	8.30%
MSW based Power Projects Tariff without capital subsidy	
Levelized Fixed tariff (without AD)	Rs 6.69 / kWh
AD Benefit	Rs 0.52 / kWh
Total Levelized Tariff (with AD)	Rs 6.17 / kWh
MSW based Power Projects Tariff with capital subsidy	
Levelized Fixed tariff (without AD)	Rs 5.54 / kWh
AD Benefit	Rs 0.38 / kWh
Total Levelized Tariff (with AD)	Rs 5.16 / kWh

Detailed tariff computation sheets for MSW based power projects without subsidy and with subsidy are enclosed as Annexure – I & Annexure – II respectively, with this order.

6 Other Issues

Proposed in Approach Paper

In the Approach Paper, the Commission has proposed arrangement for power purchase agreement between the MSW based power project owner and MPPMCL, reactive energy charges applicable to MSW based power project as per provisions under relevant regulations / code notified by MPERC/CEA / CERC depending on the case. The Commission in the Approach paper also proposed the mechanism of sharing of CDM benefits as per the provisions under the MPERC RE Regulations, 2017.

Comments/ Suggestions

The Commission has not received any comments/ suggestions from the stakeholders in this regard.

Commission's View

The Commission decides to deal with the power purchase arrangement, Reactive energy charges and sharing of CDM benefit sharing issues as provided below:

6.1 Power Purchase Agreement:

The energy generated from the MSW based power projects will be procured centrally by the M.P. Power Management Co. Ltd. (MPPMCL) at the applicable tariff determined by the Commission in this order. The Power Purchase Agreement shall be signed between the developer and the MPPMCL. The agreement will be for the sale of electricity for a period of 25 years from the date of commissioning of the plant. The energy so procured will be allocated by MPPMCL to the three distribution licensees on the basis of actual energy input in the previous financial year. MPPMCL will have a back-to-back power supply agreement with the Distribution Licensees. The developer may execute the agreement with MPPMCL before commissioning of the plant and the Commissioning Certificate may form a part of the agreement.

The MSW based power developers are required to get all the required statutory clearances/approvals/consents from the government before entering into agreement with M.P. Power Management Company Limited.

6.2 Reactive Power Supply:

The MSW based power project are deemed to be generating stations of a generating company and all functions, obligations, and duties assigned to such stations under the Electricity Act, 2003 would apply to these power stations. These stations would be required to abide by all applicable codes notified by MPERC / CERC /CEA as the case may be.

The Commission determines the charges for KVARh consumption from the grid time to time. A rate prevalent in the state would be applicable to MSW based power projects. Presently applicable rate is 27 paise per unit. Reactive energy charges as applicable would be paid by the developer to the Distribution Licensees in whose territorial area the MSW based power project is located.

6.3 **Sharing of Clean Development Mechanism (CDM) Benefits:** Regulations 18 of MPERC RE Tariff Regulations, 2017 provides mechanism for sharing of CDM benefit by the generator with the power procurer**.**

18. Sharing of CDM Benefits:

(1) The proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely-

(a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station;

(b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the power generating company and the beneficiaries."

The Commission decides to retain the above provisions for sharing of CDM benefits for this control period. However, MSW based power projects availing CDM benefit shall share the CDM proceeds annually as per above, by 31st March of every year with an affidavit stating the annual energy generation (date of commissioning as starting point of the first year), carbon credits generated, and receipts in this regard.

7 Any Other Provisions

Proposed in Approach Paper

The Commission in the Approach Paper proposed that all other provisions which are not mentioned in the approach paper explicitly for MSW based power projects like scheduling, Wheeling charges for Third-Party sale/captive consumption, Metering & Billing, payment mechanism, Default Provisions for Third-Party Sale or sale to utility, Default Provisions for Third-Party Sale or sale to utility, etc. shall be guided by the relevant provisions of Madhya Pradesh Electricity Regulatory Commission (Co-generation and Generation from Renewable sources of Energy), Regulations as applicable.

Comments/Suggestions

No Comments/ suggestions were received from the stakeholders.

Commission's View

All other provisions which are not mentioned in this tariff order explicitly MSW based power projects like scheduling, Wheeling charges for Third-Party sale/captive consumption, Metering & Billing, payment mechanism, Default Provisions for Third-Party Sale or sale to utilities, etc. shall be governed by the provisions under the relevant Regulations of the Commission.

8 Applicability of the Order

The tariff determined in this order shall be applicable to all MSW based power project using mass incineration/ RDF incineration technology commissioned on or after the date of issue of this order for sale of electricity to the distribution licensees in the state. The control period of this tariff order shall commence from the date of issue of this order till 31st March 2024 (i.e., end of FY 2023-24) unless reviewed earlier or extended.

The tariff determined by the Commission under this order shall be the ceiling tariff, the distribution licensee may procure electricity from the interested MSW based Power project proponent/ generator at a tariff lower than the tariff determined by the Commission. The MSW based Power projects commissioned during the control period of the previous Tariff order dated 29th June 2016 (in SMP 10/2016) shall be governed by the terms and conditions given in the said tariff order.

(Shashi Bhushan Pathak)	(Mukul Dhariwal)	(S.P.S Parihar)
Member	**Member**	**Chairman**

Place: Bhopal

Date: 21/09/2021

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Annexure – I

Tariff Computation for MSW based Power Projects (without subsidy)

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
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 Energy sold (lakh kWhs)	48.43	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88
O&M	92.50	96.05	99.74	103.57	107.55	111.68	115.97	120.42	125.04	129.84	134.83	140.01	145.38	150.97	156.76	162.78	169.03	175.53	182.27	189.27	196.53	204.08	211.92	220.05	228.50
Depreciation	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	86.33	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00	37.00
Interest on term loan	112.67	104.90	97.13	89.36	81.59	73.82	66.05	58.28	50.51	42.74	34.97	27.20	19.43	11.66	3.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	9.18	9.19	9.21	9.23	9.27	9.30	9.35	9.40	9.46	9.53	9.60	9.68	9.78	9.88	9.99	9.29	9.56	9.84	10.13	10.43	11.19	11.51	11.85	12.19	12.55
Return on equity	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	94.15	119.44	119.44	119.44	119.44	119.44
Fixed cost (Rs Lakh)	394.82	390.62	386.55	382.64	378.88	375.28	371.84	368.58	365.49	362.59	359.88	357.37	355.07	352.98	351.12	303.23	309.74	316.51	323.54	330.84	364.16	372.03	380.20	388.68	397.49
Tariff (Rs/kWh)	8.15	6.99	6.92	6.85	6.78	6.72	6.65	6.60	6.54	6.49	6.44	6.39	6.35	6.32	6.28	5.43	5.54	5.66	5.79	5.92	6.52	6.66	6.80	6.96	7.11
Discounting Factor	8.30%																								

Levellised Tariff	
Levelized Tariff (without AD)	Rs 6.69 / kWh
AD Benefit	Rs 0.52 / kWh
Levelized Tariff (with AD)	Rs 6.17 / kWh

Annexure – II

Tariff Computation for MSW based Power Projects (with subsidy)

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
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 Energy sold (lakh kWhs)	48.43	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88	55.88
O&M	92.50	96.05	99.74	103.57	107.55	111.68	115.97	120.42	125.04	129.84	134.83	140.01	145.38	150.97	156.76	162.78	169.03	175.53	182.27	189.27	196.53	204.08	211.92	220.05	228.50
Depreciation	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	63.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00	27.00
Interest on term loan	82.22	76.55	70.88	65.21	59.54	53.87	48.20	42.53	36.86	31.19	25.52	19.85	14.18	8.51	2.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Interest on working capital	7.76	7.82	7.87	7.93	8.00	8.08	8.16	8.25	8.35	8.45	8.56	8.68	8.81	8.95	9.10	8.66	8.93	9.21	9.50	9.80	10.43	10.76	11.09	11.44	11.80
Return on equity	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	68.70	87.16	87.16	87.16	87.16	87.16
Fixed cost (Rs Lakh)	314.18	312.11	310.19	308.41	306.79	305.32	304.02	302.90	301.95	301.18	300.61	300.24	300.07	300.13	300.40	267.15	273.67	280.44	287.46	294.76	321.12	328.99	337.16	345.65	354.46
Tariff (Rs/kWh)	6.49	5.59	5.55	5.52	5.49	5.46	5.44	5.42	5.40	5.39	5.38	5.37	5.37	5.37	5.38	4.78	4.90	5.02	5.14	5.27	5.75	5.89	6.03	6.19	6.34
Discounting Factor	8.30%																								

Levellised Tariff	
Levelized Tariff (without AD)	Rs 5.54 / kWh
AD Benefit	Rs 0.38 / kWh
Levelized Tariff (with AD)	Rs 5.16 / kWh