

**SMP – 36/2022**



## **Madhya Pradesh Electricity Regulatory Commission**

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

**PRESENT:**

**S.P.S Parihar, Chairman**

**Mukul Dhariwal, Member**

**Gopal Srivastava, Member (Law)**

**IN THE MATTER OF:**

**DETERMINATION OF TARIFF FOR PROCUREMENT OF POWER BY  
DISTRIBUTION LICENSEES FROM BIOMASS BASED POWER  
PROJECTS IN THE STATE OF MADHYA PRADESH**

**September 2022**

## ORDER

(Passed on this day of 13<sup>th</sup> September' 2022)

### 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 Biomass based power projects to be commissioned during control period of this order.

The Commission has considered various provisions of the following legislative /Policy documents, while determining tariff for biomass power projects:

#### 1.1 Legislative and Policy Provisions

##### Electricity Act, 2003

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

**Section 61 (h)** of the Electricity Act provides that, while specifying 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 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 distribution licensees as under: "regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from 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 grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of total consumption of electricity in area of a distribution licensee."

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**Tariff Policy (TP), 2016**

In compliance with Section (3) of the Electricity Act 2003, the Central Government has notified revised tariff policy on 28<sup>th</sup> January 2016. The tariff policy elaborates role of regulatory commissions, the mechanism for promoting renewable energy, 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 Waste to Energy power projects. 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.*

*(iii) -----.*

*(iv) Appropriate Commission may also provide for a suitable regulatory framework for encouraging such other emerging renewable energy technologies by prescribing separate technology-based REC multiplier (i.e., granting higher or lower number of RECs to such emerging technologies for the same level of generation). Similarly, considering the change in prices of renewable energy technologies with passage of time, the Appropriate Commission may prescribe vintage based REC multiplier (i.e., granting higher or lower number of RECs for the same level of generation based on year of commissioning of plant).*

*(2) States shall endeavour to procure power from renewable energy sources through competitive bidding to keep the tariff low, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity, shall be done through competitive bidding process, from the date to be notified by the Central Government.*

*However, till such notification, any such procurement of power from renewable energy sources projects, may be done under Section 62 of the Electricity Act, 2003. While determining the tariff from such sources, the Appropriate Commission shall take into account the solar radiation and wind*

*intensity which may differ from area to area to ensure that the benefits are passed on to the consumers.*

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## **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 07<sup>th</sup> July 2017 which is applicable till new Regulations is notified for all RE technologies.

## **2 Procedural History**

The Commission issued an Approach Paper elaborating principles, methodology and various financial and operating parameters for determination of tariff for procurement of power from Biomass based power projects by distribution licensees in the state. The Commission invited, comments/suggestions/objections in this matter from the stakeholders/ interested persons on Approach Paper through Public Notice published in Patrika- Bhopal (Hindi), The Times of India- Indore (English) and Pradesh Today- Jabalpur (Hindi) on 01.06.2022, in addition to uploading the same on the Commission's website.

The Commission has received written comments / suggestions/ objections from two stakeholders on the Approach paper. Public Hearing in this matter was held on 12.07.2022 to hear the comments/suggestions/ Objections of Stakeholders on Approach Paper. One of the stakeholders who offered comments/suggestions/objections also participated in public hearing and stated his suggestions /comments/objections, offered by him in writing before the Commission.

## **3 Tariff framework for procurement of power from Biomass based power projects**

### **3.1 Tariff Structure and Design**

#### **Proposed in Approach Paper**

MPERC RE Tariff Regulations, 2017 provides that generic tariff shall normally be determined on levelled basis. Levellisation shall be carried out for 'useful life' of renewable energy project. Further, MPERC RE Tariff Regulations, 2017 provides for single part tariff with two components for determination of generic tariff for Biomass based power projects.

Considering above regulatory provisions, the Commission in Approach Paper proposed to determine tariff on Cost- plus basis consisting of fixed cost and variable cost components. 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

Variable component is to be determined on following basis: -

- a. Cost of feedstock/fuel
- b. Auxiliary Consumption
- c. Gross Station Heat Rate
- d. Gross Calorific value
- e. Plant Load Factor

### **Comments/Suggestions**

One of the stakeholders submitted that Tariff for procuring power from biomass generation sources should be determined through competitive bidding process only. He further submitted that Hon'ble Commission may decide a ceiling tariff for competitive bidding process for procurement of power from Biomass based Generators.

### **Commission's View**

MPERC RE Tariff Regulations 2017, specifies that for Renewable Energy technologies having fuel cost component like Biomass projects, variable cost component shall be determined based on fuel cost. The Commission have also noted that the competitive bidding guidelines for procurement of power from biomass based power projects are not issued by the Ministry of Power, GoI till date. In past tariff orders, the Commission has determined the year-wise tariff with fixed cost and variable cost components.

In view of the above, Commission decides to determine year-wise tariff with two components i.e. fixed cost and variable cost components for each year. The Biomass based projects commissioned during control period of this order shall be allowed to recover the fixed cost and variable cost on the basis of actual energy generation as per year-wise fixed and variable cost determined by the Commission in this order.

Further, electricity generation over and above normative Plant Load Factor specified in this order shall be dealt according to '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 Approach Paper proposed 25 years as useful life for Biomass 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 provides the project life for Biomass based power projects as 25 years. Other SERCs also in their recent tariff order considered useful life for biomass-based projects as 25 years.

In view of aforesaid, the Commission decides to consider 25 years as useful life for Biomass 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 control period of tariff order for Biomass based power project shall commence from date of issuance of 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 Control period of this tariff order shall commence from date of issue of order till 31st March 2024 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 Biomass 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 Biomass based power projects that uses new plant and machinery based on Rankine cycle technology using biomass fuel sources and to be commissioned during new control period from 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 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 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 Approach Paper proposed to fix the benchmark capital cost of Rs 5.92 Cr/MW for biomass-based power projects having water cooled condenser after escalating the Capital Cost of Rs 4.63 Cr/MW as considered in last tariff order dated 30<sup>th</sup>

November 2016 by weighted average growth rate of 5.07%. Benchmark capital cost of Rs 6.04 Cr/MW was proposed for biomass-based power projects using air cooled condenser for tariff determination in control period of this tariff order.

In order to arrive at benchmark capital cost for the Biomass based power projects to be commissioned in new control period, the Commission has gone through the Biomass based power project's capital cost considered by CERC and other SERCs in their recent RE Regulations/ tariff orders.

### **Comments/ Suggestions**

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

### **Commission's View**

The normative capital cost proposed in the Approach Paper was based on analysis of growth rate of the normative capital cost in previous control period as well as study of approach followed by CERC and other SERC in respective tariff orders / Regulations.

In view of aforesaid, the Commission decides to fix the benchmark capital cost of Rs. 5.92 Cr/MW for biomass-based power projects having water cooled condenser and Rs 6.04 Cr/MW for biomass-based power projects having air cooled condenser for tariff determination for the control period in this order. The capital cost is inclusive of the cost towards (i) plant and machinery, (ii) land cost (iii) evacuation infrastructure up to interconnection point, and (iv) associated service charges if any.

## **3.7 Debt Equity Ratio**

### **Proposed in Approach Paper**

The Commission has proposed 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 other SERCs are also considered debt-equity ratio as 70:30 for tariff determination purpose. The Tariff policy, 2016 also mentions the same debt equity 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 as well as States like Chattisgarh, Karnataka, Haryana, and Rajasthan, provide 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.

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 Commission has not received any Comments/ suggestions from the stakeholders 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 Biomass 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 with 15 years' repayment period. In view of aforesaid, the loan repayment equal to 15 years was 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 Commission has not received any Comments/ suggestions from the stakeholders in this regard.

### **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) basis point 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. 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, for a maximum of 90 % of the Capital Cost of the assets.

### **3.12 Working Capital**

#### **Proposed in Approach Paper**

The MPERC RE Tariff Regulations, 2017 provides the following components of working capital for Biomass 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.

CERC and other SERCs like CSERC, RERC and HERC have also followed similar approach while deciding working capital requirements for Biomass based power projects. In view

of the above, it was proposed to consider working capital components as per MPERC RE Tariff 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 consider the following components of working capital for tariff determination purpose as proposed in approach paper in accordance to the RE Tariff Regulations, 2017:

- 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.

## **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 and fifty (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 350 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