

MAHARASHTRA ELECTRICITY REGULATORY COMMISSION

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Case No. 1/SM/ 2023

In the matter of

Generic Renewable Energy Tariff for FY 2023-24 under MERC (Renewable Energy Tariff) Regulations, 2019

ORDER (SUO-MOTU)

Dated: 24 May 2023

Background:

1. The Commission notified the MERC (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2019, ('RE Tariff Regulations, 2019') on 30 December 2019 after following due process. These Regulations have become applicable from 1 April 2020 for determination of tariff for RE Technologies. The Review Period under these Regulations is of five (5) financial years (FY), from FY 2020-21 up to the end of FY 2024-25.
2. As per Regulation 7.1 of RE Tariff Regulations, 2019, Tariff for following types of RE Projects shall invariably be determined through a transparent process of competitive bidding in accordance with the Guidelines issued by the Central Government under Section 63 of the Act:
 - A. Wind Energy Power Projects;
 - B. Solar PV Power Projects;
 - C. Non-Fossil Fuel-based Co-Generation;
 - D. Biomass based Projects;
 - E. Hybrid RE Power Projects.

Thus, for all the above RE Technologies, the Commission is not determining the Generic Tariff and only adopting the tariff discovered through transparent competitive bidding process as has been specified in the RE Tariff Regulations, 2019.

3. Scope of determination of Generic Tariff under RE Tariff Regulations, 2019 is limited to notification of the generic tariff for Solar Roof-top PV and determination of variable charge for Biomass and non-fossil fuel-based Co-generation Projects. Relevant Regulations is reproduced below:

“

8. Generic Tariff

The Commission shall notify the generic tariff for Solar Roof-top PV Power Projects and determine the Variable Charges for Biomass and Non-fossil fuel-based Co-generation Projects, in accordance with the norms specified in these Regulations:

Provided that the above Generic Tariff determination of Variable Charges shall not apply for Biomass and Non-fossil fuel-based Co-generation Projects, whose tariff has been determined through the competitive bidding process and adopted by the Commission.”

4. As regards generic tariff for Solar Roof-top PV power project, Regulation 64 of the RE Tariff Regulations, 2019 states that it shall be notified in accordance with the approach specified in Regulation 7.3 which is reproduced below:

“

7.3 The tariff for RE Power Projects below threshold limit of eligibility for participating in Competitive Bidding shall be considered equal to the following cases, in order of priority:

- a) Latest Tariff discovered through Competitive Bidding by concerned Distribution Licensee for similar RE project and adopted by the appropriate Commission;*
- b) The Tariff discovered through Competitive Bidding for similar RE project by Other Distribution Licensee(s) in the State and adopted by the appropriate Commission;*
- c) The Tariff discovered through Competitive Bidding for similar RE project in the Country and adopted by the appropriate Commission.”*

As per the above regulations, the process of tariff determination for Roof-top PV is not envisaged in the RE Tariff Regulations, 2019. It only envisages notification of tariff as per the Regulations 7.1 of the RE Tariff Regulations, 2019.

5. As regards determination of variable charges for Biomass and Non-fossil fuel-based Co-generation Projects, the Regulations envisage such determination only for existing projects

whose Energy Procurement Agreements (EPAs) are signed based on Generic Tariff determined by this Commission in the past. For the existing Projects which are covered under competitive bidding and all future projects, which shall be through competitive bidding only or EPAs whose tariff are pegged to competitively discovered tariff, variable charges shall be governed by their respective PPA and charges determined in this Order would not be applicable.

6. The Commission vide its Order dated 29 July 2022 (Case No. 1/SM/2022) has notified the Generic tariff for Rooftop PV and determined variable charges for Biomass and Non-fossil fuel-based Co-generation projects for FY 2022-23. Subsequently, the Commission vide its Order dated 13 February 2023 in Case No.181 of 2022 reviewed the variable charges for biomass projects.
7. Through this Suo-moto Order, the Commission is notifying Generic Tariff rates for Rooftop PV projects for FY 2023-24 and undertaking process of determining variable charges for Biomass and Non-fossil fuel-based Co- generation Projects for FY 2023-24.
8. Through a Public Notice published in the daily newspapers The Times of India and The Indian Express (English) and Maharashtra Times and Loksatta (Marathi) on 16 March 2023 the Commission invited comments by 6 April 2023 on its Draft RE Tariff Order. For public consultation, the said Draft Order was made available on MERC websites.
9. The E-Public Hearing was held on 11 April 2023. The list of persons who submitted their comments, suggestions and objections in writing and/or made oral submissions during the Public Hearing is at **Appendix-1**.
10. After considering the responses received on the Draft Order and in discharge of its mandate under Regulation 10.1 of the RE Tariff Regulations, 2019, the Commission is hereby notifying Generic Tariff rates for Rooftop PV projects for FY 2023-24 and undertaking process of determining variable charges for Biomass and Non-fossil fuel-based Co-generation Projects for FY 2023-24 based on the financial principles and technology specific parameters as explained in the subsequent sections of the Order.

11. Comments/Objections received and the Commission's Ruling

The Commission is in receipt of (3) suggestion/objections. For simplicity, the Commission has categorized the comments received in two major parts i.e. (A) Comments on Generic Tariff of Solar PV projects (B) Comments on variable charges for biomass and Non fossil based co-generation

(A) **Comments on Generic Tariff of Solar PV projects**

11.1. **Tariff for procurement of surplus solar power under net-metering arrangement**

Stakeholders comments/suggestions:

MSEDCL has contended that the Commission in its Draft Order has notified Rs. 3.05/kWh as a Generic Tariff for procurement of surplus power at the end of financial year from Rooftop-PV projects for FY 2023-24. The Commission has considered the tariff adopted in its Order dated 21 July 2022 in Case No. 114 of 2022 under ‘Pradhan Mantri Kisan Urja Suraksha Evem Uthhan Mahabhiyan’ (PM-KUSUM) from 0.5 to 2 MW capacity projects. The Rooftop-PV projects are installed by the consumers for their self-use and therefore export of surplus units may not be encouraged. The purchase of power at higher tariff may encourage the consumer to oversize the Rooftop-PV projects. Also, MSEDCL has contracted sufficient solar power quantum for fulfillment of its solar RPO target. Hence, the lowest discovered tariff may be considered as Generic Tariff for procurement of surplus power from Rooftop-PV projects. As on March 2023, the Rooftop PV solar projects installed in MSEDCL Licensee area is 1438 MW. The Commission vide its Order dated 31 March 2023 in Case No. 242 of 2022 has adopted the tariff of Rs. 2.90/kWh discovered in the MSEDCL’s tender for procurement of 500 MW Power from Grid Connected Solar projects. Accordingly, MSEDCL requested the Commission to consider the Generic Tariff as Rs. 2.90/kWh for procurement of surplus power at the end of financial year from Rooftop-PV projects for FY 2023-24.

Commission’s Ruling:

The Commission notes that MSEDCL is asking for consideration of the tariff discovered in its tender for procurement of 500 MW grid connected solar projects. In this regard it is relevant to mention that utility scale projects often have lower per kW installation and maintenance cost due to economics of scale. Project capacity tied up under PM-KUSUM is between 0.5 MW to 2 MW. Further, such surplus solar power is available at consumer end as against grid scale projects whose power is available at Maharashtra STU periphery, therefore if impact of transmission charges, transmission and distribution losses is added, then effective rate of grid scale project will come around that of PM-KUSUM project. Hence, the Commission deems it fit to consider tariff discovered in PM-KUSUM as a Generic Tariff for procurement of surplus energy from Rooftop PV projects.

11.2. **Tariff for Roof Top Solar Projects under Net billing Scheme:**

Stakeholders’ comments/suggestions:

Shri. Momin Mujeeb Ahmed, President of Real Powerloom Owner’s Association submitted

that there is difference of around 20% in APPC for 2023-24 within our state (i.e. from Rs 3.92 to 4.50/kWh) and there exists a scope for downward corrections. Objector in its rejoinder proposed that the Commission may fix the Average Power Procurement Cost at Rs 2/kWh for wind and solar energy.

Commission's Ruling:

The Commission notes that while publishing Draft Order it has indicated APPC Rate based on approved numbers from Multi Year Tariff Orders for Distribution Licensees in Maharashtra. During pendency of present proceeding, the Commission has concluded the Mid-term Review proceedings and approved revised ARR and Tariff for FY 2023-24 and FY 2024-25. Based on such MTR Order, in para 16 below, the Commission has revised the APPC rates for FY 2023-24.

As far as objection of 20% variation in APPC of different Distribution Licensees is concerned, the Commission notes that APPC of each distribution licensee depends upon sources of power purchase contracted by each of the Distribution Licensee and hence it will vary from licensee to licensee. Further request of considering APPC as Rs. 2/kWh cannot be accepted as APPC is derived based on APPC approved in Tariff Order for respective Distribution Licensee and it cannot be any ad hoc number.

(B) Comments on variable charges for biomass and Non fossil based co-generation:

Stakeholders comments/suggestions:

MEDA has suggested that consideration may be given to the market-based prices of bagasse and biomass while determining variable charges.

Shri. Momin Mujeeb Ahmed, President of Real Powerloom Owner's Association has categorically mentioned that variable charges of biomass and Non-fossil-based Co-generation projects determining at Rs 5.93 and Rs.4.57 needs to substantially brought down either by suitable decreasing the Auxiliary consumption factor or Escalation on fuel cost or by any other means as the existing rates are already unbearable by majority of the consumers in Maharashtra.

Commission's Ruling:

The Commission notes that Hon'ble APTEL in its judgment in Appeal No. 229 of 2018 dated 2 August 2021 (South Indian Sugar Mills Association Vs Karnataka Electricity Regulatory Commission) has referred to its earlier Judgement in Appeal No.199 of 2012 dated 4 September 2013 (The South Indian Sugar Mills Association & Ors Vs Tamil Nadu Electricity

Regulatory Commission) which has clearly stipulated modalities to be followed by SERCs while giving considerations to fuel prices of bagasse/biomass-based projects. Relevant para of the Judgement reads as below:

“53. The State Commission is bound to be guided by the Central Commissions principles and methodology having regard to the local conditions in the State. Accordingly, the State Commission ought to have considered the equivalent heat value method and the market price of bagasse before deciding the price of bagasse.” (Emphasis added)”

The Commission is complying with the mandate provided by APTTEL while deriving fuel prices for tariff computation in respect of bagasse and biomass-based projects.

Shri. Ahmed suggested modifying the auxiliary consumption or Escalation on fuel cost to lower the tariff. The Commission notes that auxiliary consumption and escalation on fuel cost has been stipulated in RE Tariff Regulations after due regulatory process. The Commission cannot deviate from such stipulations in the Regulations. Also, objector has not submitted any scientific /engineering rational for reducing these parameters.

Notification of Generic Tariff for Rooftop PV:

12. The Regulation 64 of RE Tariff Regulations, 2019 specify the provision for Technology-specific parameters for Utility-Scale Solar PV Power Projects and Solar Roof-top Project as under

“64. Technological Aspects:

The norms specified under these Regulations shall be applicable for determination of project-specific tariff for Utility-Scale Solar PV Power Projects, using sunlight for direct conversion into electricity through Photo Voltaic technology as approved by MNRE:

Provided that for Solar Rooftop PV Power projects, the Generic Tariff shall be notified in accordance with the approach specified in Regulation 7.3.

13. Regulation 7.3 is reproduced under para (4) above which specified three options for considering the latest tariff in order of priority. The Commission notes that none of the Distribution Licensee in the State has discovered tariff for procurement of energy from Rooftop PV projects through competitive bidding. Further, rates discovered in other States may have subsidy component or any other tariff benefits.
14. The Commission notes that presently Distribution Licensees are procuring surplus power under Net-Metering arrangement, or all power generated by Rooftop PV under Net-billing arrangement as prescribed under MERC (Grid Interactive Rooftop Renewable

Energy Generating Systems) Regulations, 2019. In this Regulation, it is stipulated that Distribution Licensee shall procure surplus power at the end of year under Net-metering arrangement at Generic Tariff approved by the Commission for that year. Whereas under Net-billing arrangement, Distribution Licensee has to enter into EPA at Average Power Procurement Cost (APPC) which would be constant for entire period of EPA. Thus, the Commission has to notify Generic Tariff for Rooftop PV which would be used for procurement of surplus energy at the end of financial year. APPC rate for entering into EPA under Net-billing arrangement would be based on power procurement approved in Tariff Order of respective Distribution Licensee.

15. As stated earlier, none of the Distribution Licensees in the State has discovered tariff for procurement of energy from Rooftop PV through competitive bidding. The Commission notes that under Net-metering arrangement it is expected that consumer will install Rooftop PV for self-consumption only and would not have a planned surplus except for only a negligible unintended quantum, more due to climatic/weather factors. Provision of annual banking allowed under Net-metering arrangement would further reduce such surplus available at the end of financial year. Such surplus power procured by Distribution Licensee is used for meeting its Solar RPO. Distribution Licensees have option of meeting their Solar RPO by procuring energy from grid scale solar PV projects and Licensees in the State have already been exercising such option. Hence, the Commission deems it fit to use latest tariff rate discovered for Grid Scale Solar project as a Generic Tariff for procurement of surplus energy from Rooftop PV projects. The Commission in its Order dated 21 July 2022 in Case No. 114 of 2022 has adopted tariffs quoted in the range of Rs. 3.05/kWh to Rs.3.10/kWh under 'Pradhan Mantri Kisan Urja Suraksha Evam Uthhan Mahabhiyan' (PM-KUSUM) from 0.5 to 2 MW capacity projects. Accordingly, the Commission hereby notifies Rs. 3.05/kWh as a Generic Tariff for procurement of surplus power at the end of Financial year from Rooftop-PV projects for FY 2023-24. It is mandatory for Distribution Licensees to procure such surplus power at the end of financial year which would in any case be counted towards meeting their Solar RPO.

16. Notification of APPC rate:

- 16.1. Although, it is not required to notify APPC rate under RE Tariff Regulations, 2019 and it can be computed based on Tariff Order of respective Distribution Licensee, for ease of understanding of various stakeholders, the Commission is representing the same in this Order. The Commission notes that RE Tariff Regulations, 2019 provide the definition of Average Power Purchase Cost (APPC) as under:

“

2.1 (c) Average Power Purchase Cost” or “APPC” means the weighted average price at which the Distribution Licensee has purchased or is expected to purchase electricity

(excluding procurement from RE sources and liquid fuel sources), including the cost of self-generation, if any, as approved by the Commission in the relevant Tariff Order or any other general or specific Order;”

- 16.2. Thus, while determining APPC, procurement from renewable energy sources and liquid fuel sources needs to be excluded. For computing APPC, the Commission has considered the MTR Orders for Distribution Licensees in Maharashtra issued on 31 March 2023. Accordingly, Distribution Licensee wise APPC for FY 2023- 24 is given below:

Distribution Licensee	Tariff Order		APPC excluding RE & Liquid Fuel Source for FY 2023-24 (Rs/kWh)
	Case No	Date	
MSEDCL	226 of 2022	31 March 2023	4.81
BEST Undertaking	212 of 2022		6.16
AEML-D	231 of 2022		4.63
TPC-D	225 of 2022		7.16
MBPPL	216 of 2022		5.85
KRCIPL	214 of 2022		5.62
GEPL	215 of 2022		5.64
LBSCML	220 of 2022		5.20
JNPT	219 of 2022		5.33
EON-I	235 of 2022		5.40
EON-II	236 of 2022		5.40
MADC	235 of 2020	21 July 2022	5.74

APPC rate mentioned in last column of the above table shall be used by Distribution Licensee for entering into an EPA with Rooftop PV under Net-billing arrangement for project commissioned in FY 2023-24. Further such rate will be constant for entire period of EPA.

Variable charges of Biomass and Non-fossil fuel-based Co-generation Projects:

17. For determination of variable charge/fuel cost, RE Tariff Regulations 2019, stipulates following:

For Biomass-based Power Project:

“46 The biomass fuel price for the first year of the Project shall be determined based on the prevailing prices of the fuel mix for each Project and based on an independent study by the Commission, and shall thereafter be linked to the indexation mechanism specified in Regulation 47:

For Non-fossil Fuel-based Co-Generation Project:

“56 The price of bagasse for the first year of the Project shall be determined based on the prevailing price of bagasse as assessed through an independent study by the Commission, and shall thereafter be linked to the indexation mechanism specified in Regulation 57:

18. In compliance of the regulatory mandate, the Commission conducted the study through ‘The Energy and Resource Institute (TERI)’ to determine the Biomass and Bagasse fuel availability and their Prices in the State of Maharashtra. The Commission deliberated on the study finding in its Suo Motu Order in Case No.1/SM/2022 dated 29 July 2022 and determined the variable charges for Biomass and Non-fossil fuel-based Co-generation Projects.
19. MERC RE Tariff Regulations 2019 stipulated following formula for determination of variable charge for biomass-based power project:

“47.1 In the case of both existing and new Biomass-based Power Projects, the following indexing mechanism for adjustment of fuel prices for each year of operation will be applicable for determination of the variable charge component of tariff:

The Variable Charge for the nth year shall be computed as under:

$$VC_n = VC_1 \times (P_n / P_1)$$

where,

VC₁ represents the Variable Charge based on Biomass Price P₁ for first year as specified under Regulation 46, and which shall be determined as under:

$$VC_1 = \frac{\text{Station Heat Rate (SHR)}}{\text{Gross Calorific Value (GCV)}} \times \frac{1}{(1 - \text{Auxiliary Consumption Factor})} \times P_1 / 1000$$

P_n = Price per tonne of biomass for the nth year to be considered for tariff determination;

P_{n-1} = Price per tonne of biomass for the (n-1)th year to be considered for tariff determination;

P₁ shall be the Biomass price for FY 2020-21 as specified under Regulation 46;

*47.2 The Biomass fuel price shall be revised by the Commission taking into consideration the Biomass fuel price determined by the Central Commission, or a normative escalation factor based on an independent study by the Commission, or **5% per annum**, as the Commission may consider appropriate.”*

20. Similar formula has been stipulated in Regulation 57 of RE Tariff Regulations 2019 for computing variable charge for non-fossil fuel-based co-generation project.
21. The Commission in its Order dated 29 July 2022 in Case No.1/SM/2022 considered 5% escalation factor for deriving fuel price for FY 2021-22 and FY 2022-23 over base year of FY 2020-21. The Commission in this Order continued same approach of 5% escalation per annum.
22. The Commission notes that it has adopted following fuel prices for base year of FY 2020-21 (as approved in RE Tariff Order dated 29 July 2022 and subsequent review Order dated 13 February 2023):

Sr. No.	RE Technology	Fuel Price (Rs/MT)
1	Biomass based RE Project	Rs.3965/MT
2	Non-fossil fuel-based Co-generation Projects	Rs. 2258/MT

23. Following parameters have been used in above stipulated formula (Para 19) for computation of variable charge:

Parameter	Source	Biomass Project	Non-fossil fuel based co-generation project
Station Heat Rate (SHR)	Regulation	4200 kcal/kWh	3600 kcal/kWh
Gross Calorific Value (GCV)	Regulation	3611 kcal/kg	2250 kcal/kg
Auxiliary Consumption Factor	Regulation	10%	8.50%
Fuel Price	As above	Rs. 4589.98 /MT	Rs. 2613.98 / MT
Escalation on fuel Cost	Regulation	5%	5%

24. By using above parameters in the formula stipulated in the Regulations, Variable Charges are determined as below:

Year	Biomass Project	Non-fossil fuel-based co-generation project
FY 2023-24	Rs. 5.93/kWh	Rs. 4.57/kWh

25. Date of Applicability of RE Tariff Order:

- 25.1. Previous RE Tariff Order was applicable till 31 March 2023. Tariff Order for FY 2023- 24 is being issued through present Order after due public consultation process. Hence, there is a need to provide clarity on the aspect of tariff applicable for the period of 1 April 2023 to

date of this Order.

- 25.2. The Commission in draft Order published for public consultation through Public Notice dated 16 March 2023 has stipulated that this tariff Order will be applicable for FY 2023- 24 with effect from 1 April 2023. Therefore, all stakeholders are well informed about applicability with effect from 1 April 2023.
- 25.3. Further, generic tariff for Rooftop Solar and APFC is just notification and not determination of tariff. Same is clarified in draft Order itself. Hence, same can be easily made applicable from 1 April 2023.
- 25.4. Accordingly, the Commission rules that Tariff rates notified in this Order shall be applicable for FY 2023-24 with effect from 1 April 2023. In case of billing cycle issue in respect of biomass and bagasse based projects, Distribution Licensee shall adjust the same through upcoming bills.

With the above dispensation, the Commission disposes of suo-motu case registered as Case No. 1/SM/2023.

Sd/-
(Mukesh Khullar)
Member

Sd/-
(I.M. Bohari)
Member

Sd/-
(Sanjay Kumar)
Chairperson


(Dr. Rajendra Ambekar)
I/c Secretary



Appendix-1

List of Organisations /persons who submitted Suggestions and Objections

Sr. No.	Name
1.	M/s. Momin Mujeeb Ahmed, President of Real Powerloom Owner's Association
2.	M/s. Maharashtra State Electricity Distribution Co. Ltd. Mumbai
3.	M/s. Maharashtra Energy Development Agency