

## MPERC (Draft guidelines for Approach Paper on “Methodology for Estimation of Electricity generated from Biomass in Biomass co-fired thermal power plants”)

MPERC notified a draft for approach paper on “Methodology for Estimation of Electricity generated from Biomass in Biomass co-fired thermal power plants”. The objective of this approach paper is to mandate the state sector coal-based thermal power plants whose tariff is determined by the Commission under Section 62, Section 63 of the Electricity Act 2003 and also the captive power plant to use biomass pellets along with coal. The key highlights of this approach paper are:

1. All coal based thermal power plants with “bowl mill shall mandatorily use 5% blend of biomass pellets”, “with ball & race mill shall mandatorily use 5% blend of torrefied biomass pellets only” and “with ball & tube mills shall mandatorily use 5 % blend of torrefied biomass pellets with volatile content below 22%”, on annual basis primarily of agro residue along with coal.
2. The generating utilities with some units under reserve shutdown or not being despatched due to Merit Order Despatch (MOD) consideration, shall increase the percentage of co-firing up to 10% in their other operating units/ plants (5% in case of ball and tube mills).
3. The minimum contract period for procurement of biomass pellets by generating utilities shall be 7 years so as to avoid delay in awarding contracts and to build up long term supply chain.
4. **Tariff determination:** The increase in cost due to co-firing of biomass pellets shall be passed through in Energy Charge Rate (ECR) for projects set up under section 62 of the Electricity Act 2003 whereas the projects set up under section 63 of the Electricity Act 2003 shall claim the increase in ECR due to biomass co-firing under Change in Law provisions.
5. **Scheduling:** The impact on ECR due to co-firing of biomass pellets shall not be considered in deciding MOD of the power plant.
6. **RPO:** The obligated entities can meet their Renewable Purchase Obligations (RPO) by buying such generation of co- firing.
7. **Landed cost of Biomass Fuel:** The landed cost of biomass fuel shall be worked out based on the delivered cost of biomass at the unloading point of the generating station, inclusive of taxes and duties as applicable.
8. **ECR:** The energy charge rate of the blended fuel shall be worked out considering consumption of biomass based on blending ratio as specified by Authority or actual consumption of biomass, whichever is lower.
9. The policy would be in force for 25 years or till the useful life of the thermal power plant whichever is earlier.

The document can be accessed [here](#).

Comments on

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**1. Phase-wise Approach to Biomass Utilization:** The Ministry of Power, Government of India, vide letter No. 11/86/2017-Th11 dated 17<sup>th</sup> November, 2017 issued the "Policy for Biomass Utilization for Power Generation through co-firing in Pulverized Coal Fired Boilers". The policy envisaged co-firing of 5-10% biomass pellets made primarily of agro residue along in fluidized bed and pulverized coal units.

A number of biomass-based electricity generating plants have emerged in the rural landscape. One of the outcome of emergence of such plants has been an increase in the biomass price due to localized nature of the agricultural waste biomass. Transportation and palletisation further increases cost of the palletized fuel.

**Mandating a steep biomass-blending target, which is not commensurate with development of the supply chain for biomass and its palletization, may lead to increase in its price leading to higher cost of procurement both for the coal-based power plants as well as the biomass-based plants.** This may change overall economics of the fuel and its utilization across a variety of usage affecting the whole waste biomass ecosystem comprising of users like pulp and paper industry, biomass/wood based products, animal fodder as well as biomass based electricity generation. **It is suggested to adopt a phased approach for biomass utilization with gradual increase over the years. It may begin from 2% and increase by one percentage point each year up to the long-term target.**

**2. Localised Biomass Supply:** Use of agricultural residue including that through palletisation should minimise biomass transportation else this effort would be carbon negative as fossil fuel burned in biomass transportation would effectively replace the carbon avoided by its use. The adoption of biomass share should keep this constraint in mind while mandating the target so that biomass utilization does not turn out to be carbon negative. This further highlights the need for phased target, in a manner similar to RPO trajectory, depending upon the availability of biomass for generation of electricity.

**3. RPO/RGO:** Draft Clause 1.1.5 (a) states that “Clarification of Ministry of New and Renewable Energy (“the MNRE”), Government of India issued vide reference dated 26.9.2019, states that the power generated from co-firing of Biomass in Coal based Thermal Power Plants is Renewable Energy

(RE) and is eligible for meeting non-solar Renewable Purchase Obligation (RPO).” It should also be noted that MoP, on 3.03.2023, issued a resolution ensuring all new thermal plants with SCOD after 01.04.2023 to generate 40% of their total power production from renewable energy sources<sup>1</sup>. It should be clarified whether the energy generated from biomass co-firing can be used by thermal plants for meeting their RGO as well. **To ensure that there is no double counting, biomass use claimed towards RPO shall not be used for claim against RGO and vice versa.**

**4. Applicability for Merchant Power Plants:** Clause 1.2 (viii)(d) states that “*Obligated Entities such as Discoms can meet their Renewable Purchase Obligations (RPO) by buying such generation of co-firing*”.

The provision for considering the energy consumed by a beneficiary through merchant power plants using such biomass co-firing for fulfilment of their RPO may be clarified as the generating plants will supply their beneficiaries only, and not any other obligated entities which will only be able to meet such obligation through the merchant power plants. Further, the RPO/RGO accounting should ensure that there is no double counting of the same.

**5. Normative rather than Actual Coal Consumption:** Clause 1.3 (b) states that “*Energy generated from biomass shall be worked out based on the actual consumption of biomass and coal rather than on normative operational parameters of Station Heat Rate and Auxiliary Power Consumption.*” (emphasis added)

It is suggested that the biomass to be considered on the basis of **actual consumption but the coal should be worked out on normative basis as per the current normative framework for operational parameters of thermal power plants** (actual biomass consumption should be deducted from normative coal consumption).

**6. Coal/Biomass Consumption:** As per draft Clause 1.3 (e) “*Consumption of coal and biomass shall be worked out based on opening balance, receipt and closing balance of coal and biomass* (emphasis added)”.

To ensure that any trading/transfer of biomass is properly accounted for, the above Clause may be rephrased as ‘*Consumption of coal and biomass shall be worked out based on opening balance, receipt, **trade/transfer** and closing balance of coal and biomass **respectively**. **Further these should be verified from** invoice and e-way bills, as applicable.’ (emphasis added)”.*

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<sup>1</sup> Notification of Ministry of Power: Renewable Generation Obligation as per revised Tariff Policy 2016

**7. Landed cost of Biomass Fuel to include Transportation cost:** Draft Clause 1.5 states that “.....based on the delivered cost of biomass at the unloading point of the generating station, inclusive of **taxes and duties** as applicable (*emphasis added*)”.

This Clause may be rephrased as “..... based on the delivered cost of biomass at the unloading point of the generating station, inclusive of **taxes, duties and transportation cost** as applicable.”

**8. Auxiliary Consumption for Energy generated by biomass:** According to Step 1 of draft Clause 1.6, ‘*The electricity generated from Biomass shall be estimated at Generator Terminal on monthly basis in accordance with the following formula:*

$$Eb(G) = (Qb * Gb)(Qc * Gc) + (Qb * Gb) * E(GT)$$

where,

$Qb$  = Quantity of bio-mass consumed during the month (kg)

$Gb$  = Weighted average Gross Calorific Value (GCV) of bio-mass consumed during month (kCal/kg)

$Qc$  = Quantity of coal burnt during the month (kg)

$Gc$  = Weighted average GCV of coal burnt during the month (kCal/kg)

$E(GT)$  = Gross electrical energy generated at Generator Terminal during the month (kWh)’

It is suggested that for calculation of RPO, the ex-bus net energy i.e. the energy generated excluding the auxiliary consumption of the plant be considered instead of the gross energy at the generator terminals. Thus, for RPO calculation,

$$E(RPO) = Eb(G) - Eb(A)$$

where,

$E(RPO)$  = Energy generated from biomass to be considered for RPO calculation.

$Eb(G)$  = Electrical energy generated by bio-mass at Generator terminal during the month (kWh).

$Eb(A)$  = Auxiliary Consumption.