TAMIL NADU ELECTRICITY REGULATORY COMMISSION

Draft Notification No.TNERC/TR/5/2- dated 31-07-2020
(Comments invited by 02-09-2020)

The following draft of amendment to the Tamil Nadu Electricity Regulatory Commission (Terms and Conditions for determination of Tariff) Regulations, 2005, which it is proposed to make in exercise of the powers conferred by section 181 read with section 61 of the Electricity Act, 2003 (Central Act 36 of 2003) and all other powers enabling it in this behalf, is hereby published for information of all persons likely to be affected thereby, as required by sub-section (3) of section 181 of the said Act.

2. Notice is hereby given that the draft amendment will be taken into consideration after the expiry of thirty days from the date of publication of this Notification in the TNERC website and that any objection or suggestion, which may be received from any person before the expiry of the aforesaid period will be considered by the Commission.

3. Objection or suggestion, if any, should be addressed in duplicate alongwith a soft copy to the Secretary, Tamil Nadu Electricity Regulatory Commission, 19-A, Rukmini Lakshmipathy Salai, Egmore, Chennai – 600 008 (email id – tnerc@nic.in)

DRAFT AMENDMENT

(i) In the said Regulations, in Regulation 18 the following clause shall be inserted after Clause 8, namely:-

"(9): Capital expenditure on account of biomass handling equipment and facilities, for co-firing".

(ii) In the said Regulations, in Regulation 37 the following clause shall be inserted after Clause (vi), namely:-

"(vii): Where biomass fuel is used for blending with coal, 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. 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".

Methodology to be followed for estimating electricity generated from biomass in biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass

The methodology specified hereunder is to be followed by Inter-State Generating Stations (ISGS), Regional Power Committee (RPCs) for estimating electricity generated from biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass.

Step-1:

2. The electricity generated from biomass shall be estimated at generator terminal on monthly basis in accordance with the following formulae:

$$Eb(G) = [(Qb \times Gb) / ((Qc \times Gc) + (Qb \times Gb))] \times E(GT)$$

Where,

Eb(G) = Electrical energy generated by biomass at generator terminal during the month (kWh);

Qb = Quantity of biomass consumed during the month (kg)

Gb = Weighted average Gross Calorific Value (GCV) of biomass consumed during the month (kCal/kg)

E(GT) = Gross electrical energy generated at generator terminal during the month (kWh)

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

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

3. The product (Qb x Gb) represents heat (in kCal) input through biomass during the month and shall be estimated on monthly basis by applying the following formulae:

Qb x Gb(kCal) = {Opening balance of biomass (kg) x weighted average GCV of opening balance of biomass (kCal/kg)}

+ {quantity of biomass received during the month (kg) x weighted average GCV of biomass received during the month (kCal/kg)}

- {closing stock of biomass (kg) x weighted average GCV of the closing balance of biomass (kCal/kg)}.

4. The product (Qc x Gc) represents heat (in kCal) input through coal during the month and shall be estimated on monthly basis by applying the following formulae:

Qc x Gc (kCal) = {Opening balance of coal (kg) x weighted average GCV of Opening balance of coal (kCal/kg)}
+ {quantity of coal received during the month (kg) x weighted average GCV of coal received during the month (kCal/kg)}
- {closing stock of coal (kg) x weighted average GCV of the closing balance of coal (kCal/kg)}

Step-2:

5. The ex-bus electrical energy generated by using biomass shall be estimated on monthly basis by applying following formulae:

Eb (ex-bus) = Eb(G) {1-[(E(GT) – ESO)/E(GT)]}

Where,

Eb (ex-bus) = Electrical energy generated by biomass ex-bus during the month (kWh);

Eb (G) = Electrical energy generated by biomass at Generator terminal during the month arrived at Step-1(kWh);

E(GT) = Total electrical energy generated at generator terminal during the month (kWh);

ESO = Total energy sent out (ex-bus) during the month (kWh).

6. The generating company shall provide information to the beneficiaries and publish them in the following manner:

(a) The generating company shall maintain separate fuel accounts for coal and biomass, with opening balance, fuel received during the month and closing balance in kg. The generating company shall also maintain separate GCV (in kCal/kg) accounts for coal and biomass, with weighted average GCV of the opening balance, weighted average GCV of the fuel received during the month and weighted average GCV of the closing balance at the end of the month;

(b) These monthly accounts of fuel and GCV, duly signed by the authorised official of the generating company shall be published on its website alongwith the bills towards purchase of coal and biomass.

(c) These monthly fuel and GCV accounts shall be made available to authorized representative/s of beneficiaries and RLDC/SLDC on demand. Any authorized representative of beneficiaries shall be allowed to witness the GCV testing of biomass.

(d) Generating company shall keep beneficiaries informed about the co-firing of biomass with coal. Authorised representatives of the beneficiaries shall be allowed inspection during the period when biomass is being co-fired.

(e) The generating company shall publish the quantum of biomass fired and the energy generated from biomass based on the formulae specified above on its website.

/By Order of the Commission/

-sd/-

(S. CHINNARAJALU)
SECRETARY

EXPLANATORY STATEMENT

1. The Ministry of Power, Government of India, has issued the policy for Biomass Utilization for Power Generation through Co-firing in Pulverized Coal Fired Boilers in which it has requested to use 5-10% blend of biomass pellets made, primarily of agro residue alongwith coal.

2. The Ministry of New and Renewable Energy (MNRE), GoI, has clarified that the power generated from Co-firing of biomass in thermal power plants is renewable energy and is eligible for meeting non-solar Renewable Purchase Obligation and requested Central Electricity Regulatory Commission to formulate a methodology to ascertain quantum of energy produced from biomass in biomass co-fired thermal power plants.

3. The Central Electricity Regulatory Commission has issued a Suo Motu Order for methodology for estimating the energy generated from biomass in biomass co-fired coal based thermal power plants, including captive and co-generation power plants co-firing biomass.

4. Before issuing the Suo Motu Order, the Central Electricity Regulatory Commission has recognized the use of biomass in biomass co-fired coal based thermal power plants under the CERC (Terms and Conditions of Tariff) Regulations, 2019.

5. The Ministry of New and Renewable Energy, GoI, has requested the Commission to take necessary action to notify and adopt the effective implementation of methodology for estimation of electricity generated from biomass in biomass co-fired thermal power plants.

6. The National Thermal Power Corporation Ltd., (NTPC) has undertaken a pilot study for firing biomass in one of its thermal units with pulverized coal fired boilers. It has successfully co-fired about 10% blend of biomass pellets with coal in trial mode in its 210 MW pulverized coal fired unit at Dadri Plant. This pilot study has demonstrated that the blend of coal and biomass pellets can safely be fired in pulverized coal power plants.

7. The Central Electricity Regulatory Commission has specified methodology to be followed for estimating electricity generated from biomass in biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass.

8. The amendment seeks to give effect to the above proposal.

/By Order of the Commission/

-sd/-

(S. CHINNARAJALU)
SECRETARY

STATEMENT SHOWING EXISTING PROVISION AND PROVISION AS AMENDED

Existing Provision	Proposed Amendment
18. Capital Cost (1) ….. (8) **New Provision**	 (9) Capital expenditure on account of biomass handling equipment and facilities, for co-firing.
37. Norms of Operation (i) …. (vi) **New Provision**	 (vii) Where biomass fuel is used for blending with coal, 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. 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. **<u>Methodology to be followed for estimating electricity generated from biomass in biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass</u>** The methodology specified hereunder is to be followed by Inter-State Generating Stations (ISGS), Regional Power Committee (RPCs) for estimating electricity generated from biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass. **<u>Step-1:</u>** 2. The electricity generated from biomass shall be estimated at generator terminal on monthly basis in accordance with the following formulae: Eb(G) = [(Qb x Gb) / ((Qc x Gc) + (Qb x Gb))] x E(GT)

	Where, Eb(G) = Electrical energy generated by biomass at generator terminal during the month (kWh); Qb = Quantity of biomass consumed during the month (kg) Gb = Weighted average Gross Calorific Value (GCV) of biomass consumed during the month (kCal/kg) E(GT) = Gross electrical energy generated at generator terminal during the month (kWh) Qc = Quantity of coal burnt during the month (kg) Gc = Weighted average GCV of coal burnt during the month (kCal/kg). 3. The product (Qb x Gb) represents heat (in kCal) input through biomass during the month and shall be estimated on monthly basis by applying the following formulae: Qb x Gb(kCal) = {Opening balance of

	biomass (kg) x weighted average GCV of opening balance of biomass (kCal/kg)} + {quantity of biomass received during the month (kg) x weighted average GCV of biomass received during the month (kCal/kg)} - {closing stock of biomass (kg) x weighted average GCV of the closing balance of biomass (kCal/kg)}. 4. The product (Qc x Gc) represents heat (in kCal) input through coal during the month and shall be estimated on monthly basis by applying the following formulae: Qc x Gc (kCal) = {Opening balance of coal (kg) x weighted average GCV of Opening balance of coal (kCal/kg)} + {quantity of coal received during the month (kg) x weighted average GCV of coal received during the month (kCal/kg)} - {closing stock of coal (kg) x

	weighted average GCV of the closing balance of coal (kCal/kg)} **Step-2:** 5. The ex-bus electrical energy generated by using biomass shall be estimated on monthly basis by applying following formulae: Eb (ex-bus) = Eb(G) {1-[(E(GT) – ESO)/E(GT)]} Where, Eb (ex-bus) = Electrical energy generated by biomass ex-bus during the month (kWh); Eb (G) = Electrical energy generated by biomass at Generator terminal during the month arrived at Step-1(kWh); E(GT) = Total electrical energy generated at generator terminal during the month (kWh); ESO = Total energy sent out (ex-bus) during the month (kWh). 6. The generating company shall provide information to the

	beneficiaries and publish them in the following manner: (a) The generating company shall maintain separate fuel accounts for coal and biomass, with opening balance, fuel received during the month and closing balance in kg. The generating company shall also maintain separate GCV (in kCal/kg) accounts for coal and biomass, with weighted average GCV of the opening balance, weighted average GCV of the fuel received during the month and weighted average GCV of the closing balance at the end of the month; (b) These monthly accounts of fuel and GCV, duly signed by the authorised official of the generating company shall be published on its website alongwith the bills towards purchase of coal and biomass. (c) These monthly fuel and GCV accounts shall be made available to authorized representative/s of

	beneficiaries and RLDC/SLDC on demand. Any authorized representative of beneficiaries shall be allowed to witness the GCV testing of biomass. (d) Generating company shall keep beneficiaries informed about the co-firing of biomass with coal. Authorised representatives of the beneficiaries shall be allowed inspection during the period when biomass is being co-fired. (e) The generating company shall publish the quantum of biomass fired and the energy generated from biomass based on the formulae specified above on its website.

/By Order of the Commission/

-sd/-

(S. CHINNARAJALU)
SECRETARY