Chhattisgarh State Electricity Regulatory Commission
Vidyut Niyamak Bhawan
Irrigation Colony, Shanti Nagar, Raipur

Dated 18th August 2022

No. 07/CSERC/2022 - In exercise of powers vested under section 86(1)(e) read with Section 181 of the Electricity Act 2003 (36 of 2003) and all other powers enabling it in this behalf, this Commission made Chhattisgarh State Electricity Regulatory Commission (Renewable Purchase Obligation and REC framework Implementation) Regulations, 2021 (here after called "the Principal Regulations"). These regulations were applicable from April 0l, 2021. In these regulations, obligated entities and minimum quantum of electricity to be procured by obligated entities as percentage of total consumption for three years starting 2021-22 have been specified.

Ministry of Power vide it's letter dated 17.11.2017 issued guidelines to use 5-10% blend of biomass pellets made, primarily, of agro residue along with coal, in all fluidized bed and pulverized coal based thermal power plants except those having ball and tube mill, of power generating utilities, public or private located in India. On 08.10.2021, MoP revised the policy for biomass utilisation for power generation through co-firing in coal-based power plants in which all coal based thermal power plants of power generation utilities with bowl mill, ball & rice mill and ball & tube mills have to use mandatorily 5% blend of biomass pellets on annual basis. Meantime, Central Electricity Authority of India (CEA) issued an advisory on 24.11.2017 to all the stakeholders for utilizing biomass in coal based thermal power plants.
Subsequently, in order to promote co-firing of biomass in thermal power

plants, Ministry of New and Renewable Energy (MNRE), Government of India, vide its notification dated 26.9.2019 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 (RPO) and has requested Central Commission to formulate and notify the procedure/methodology for quantifying the energy produced from biomass in biomass co-fired thermal power plants in a reliable and accurate manner.

Central Commission, vide order dated 18.02.2020 in suo-motu petition 12/SM/2019, has prescribed methodology for estimation of electricity generated from biomass in biomass co-fired thermal power plants. In this order the Central Commission observed that biomass can also be used in thermal captive power plants and the methodology shall be applicable to the captive power plants using co-firing of biomass.

The Commission, vide order dated 20.04.2022 in P No. 24 of 2022, has held as follows;

> *"6. From the above discussion it is clear that this matter can be resolved only making suitable amendments in CSERC (Renewable Purchase Obligation and REC Framework implementation) Regulations, 2021, for which regulatory process is required. We direct regulatory process be initiated by the concerned section."*

Recently, Ministry of Power vide it's order dated 22.07.2022 issued trajectory till 2029-30 for RPO and energy storage obligation. This trajectory has been specified for periods beyond 2021-22. First proviso of para 4.3 of Principal Regulations 2021 specifies as follows;

> *"Provided that RPO levels for the year 2022-23 & 2023-24 shall be as specified above or MoP/MNRE trajectory to be specified, whichever is higher."*

In view of the above, the Commission is of opinion to align the RPO in line with MoP circular till the year 2029-30.

In pursuance of the Principal Regulations and to give effects to the foregoing developments, the Commission hereby makes the following regulations to amend the Principal Regulations.

CHHATTISGARH STATE ELECTRICITY REGULATORY COMMISSION (RENEWABLE PURCHASE OBLIGATION AND REC FRAMEWORK IMPLEMENTATION) (FIRST AMENDMENT) REGULATIONS, 2022

1. Short Title, Extent and Commencement

1.1 These Regulations shall be called the Chhattisgarh State Electricity Regulatory Commission (Renewable Purchase Obligation and REC framework Implementation) (First Amendment) Regulations, 2022.

1.2 These Regulations shall extend to the whole of the State of Chhattisgarh.

1.3 These Regulations shall come into force from date of publications in the CG Rajpatra.

2. Substitution of last para of regulation 3

For last para of regulation 3 of the principal regulations the following shall be substituted namely:-

The RPO framework outlined under these Regulations shall commence from the April01, 2021 and shall generally be applicable until March31, 2030 (i.e., upto the financial year 2029-2030). The RPO specified for the Financial Year 2029-30 shall be continued beyond 2029-30 till any revision is effected by the Commission in this regard.

2. Substitution of new sub regulation for sub regulation 4.2 of regulation 4

For sub regulation 4.2 of regulation 4 of the principal regulations, the following sub regulation shall be substituted namely:-

4.2 All renewable energy purchase directly from generating stations or through trader or through power exchanges shall be considered for meeting the RPO;

For meeting the RPO, renewable power purchases made by the obligated entities under long term power purchase agreements with the biomass based generating plants and coal based thermal power plants co-firing bio-mass shall only be considered.

Purchases made by obligated entities from renewable energy sources other than biomass coal based thermal power plants co-firing bio-mass such as small hydel, large hydro, wind and solar under long-term, medium-term and short-term arrangements, will be considered for meeting the RPO.

Electricity generated from coal based thermal power plants including captive and co-generation power plants co-firing bio-mass shall be considered for meeting the RPO of obligated entities such as co-located, non co-located captive users and co-located end users who do not qualify as captive users under Electricity Rules 2005.

Methodology of estimation of electricity generated from biomass in biomass co-firing coal based thermal power plants, including captive and co-generation power plants co-firing biomass shall be as per Annexure A.

3. Modification of RPO Trajectory in Table 1 in sub regulation 4.3 of regulation 4

Table 1 in sub regulation 4.3 of regulation 4 of the principal regulations shall be substituted as:-

Year	Solar	Non-Solar		Total
		HPO	Others	
2021-22	10.50%	0.18%	10.5%	21.18%

Year	Wind RPO	HPO	Other RPO	Total RPO
2022-23	0.81%	0.35%	23.44%	24.61%
2023-24	1.60%	0.66%	24.81%	27.08%
2024-25	2.46%	1.08%	26.37%	29.91%
2025-26	3.36%	1.48%	28.17%	33.01%
2026-27	4.29%	1.80%	29.86%	35.95%
2027-28	5.23%	2.15%	31.43%	38.81%
2028-29	6.16%	2.51%	32.69%	41.36%
2029-30	6.94%	2.82%	33.57%	43.33%

(a) Wind RPO shall be met only by energy produced from Wind Power Projects (WPPs), commissioned after 31st March 2022.

(b) HPO shall be met only by energy produced from LHPs (including pumped storage projects, PSPs), commissioned after 8th March 2019.

(c) Other RPO may be met by energy produced from any RE power project not mentioned in (a) and (b) above.

(d) Any shortfall remaining in achievement of 'Other RPO' category in a particular year can be met with either the excess energy consumed form WPPs, commissioned after 31st March 2022 beyond 'Wind RPO' for that year or with, excess energy consumed from eligible LHPs (including PSPs), commissioned after 8th March 2019 beyond 'HPO' for that year or partly from both. Further, any shortfall in achievement of 'Wind RPO' in a particular year can be met with excess energy consumed from

Hydro Power Plants, which is in excess of 'HPO' for that year and vice versa.

(e) The following percentage of total energy consumed shall be solar/wind energy along with/through storage.

FY	Storage (on Energy basis)
2023-24	1.0%
2024-25	1.5%
2025-26	2.0%
2026-27	2.5%
2027-28	3.0%
2028-29	3.5%
2029-30	4.0%

The Energy Storage Obligation in table above shall be calculated in energy terms as a percentage of total consumption of electricity and shall be treated as fulfilled only when at least 85% of the total energy stored in the Energy Storage System (ESS), on an annual basis, is procured from renewable energy sources.

The Energy Storage Obligation to the extent of energy stored from RE sources shall be considered as a part of fulfilment of the "Total RPO".

4. Substitution of first proviso of sub regulation 4.3 of regulation 4

For first proviso of sub regulation 4.3 of regulation 4 of the principal regulations, the following shall be substituted namely:-

Provided that RPO and energy storage obligation for the year 2022-23 & beyond shall be subject modification/amendments specified by MoP/MNRE from time to time, if any.

5. Substitution of new sub regulation for sub regulation 4.4 of regulation 4

For sub regulation 4.4 of regulation 4 of the principal regulations, the following sub regulation shall be substituted namely:-

4.4 Such power purchase shall be made at tariffs determined by the Commission from time to time for procurement of power by distribution licensees or price discovered through competitive bidding as per the guidelines prescribed by MNRE. Long term purchase already contracted by the distribution licensees as per the orders of the Commission for biomass-based power plants, power generated from co firing of biomass in thermal power plants, small hydel plants or solar power plants in the State shall be reckoned for the purpose of the purchase obligation given above.

6. New Annexure to be added as Annexure-A

Methodology estimation of 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 generating companies, State Load Dispatch Centre, State Agency 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:

1. 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), as specified in the CSERC RE Tariff Regulations
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)

2. 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)}.

3. 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:

4. 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).

5. The generating company shall provide information to the beneficiaries and State Agency related to biomass uses and monitoring mechanism/power to get statistics for the use of biomass fuel shall be as per provisions specified in prevailing CSERC RE Tariff Regulations for biomass and co-generation

plants. State Agency shall verify electricity generated from biomass co firing in power generating plants.

Monthly fuel and GCV accounts as maintained by generating station shall be made available to authorized representative/s of beneficiaries and SLDC on demand.

By Order of the Commission

Secretary