

**AMENDMENT NO. 1 TO THE RPO MANUAL**

**RPO Manual for DISCOM / CPP / OA Consumer's (Obligated Entities) based on Punjab State Electricity Regulatory Commission's (Renewable Purchase Obligation, Its Compliance and Implementation Of REC Framework) Regulations, 2011 as amended up to date.**

**AND**

**Methodology for estimating the energy generated from co firing of biomass in coal based captive power plants.**

**No. RPO/AMND/01 Dt. 24.11.2021**

The Hon'ble Punjab State Electricity Regulatory Commission (PSERC), in its order dated 24.9.2021 in Petition No 23 of 2021 considered the issue of generation through Co-firing of Biomass fuels in coal based CPPs and decided as under:-

1. *The definition of 'Renewable Energy Sources' specified in the existing PSERC Regulations read with MNRE notification dated 26.09.2019 permits the consideration of power generated from co-firing of biomass as a 'Renewable Energy'. Accordingly, the same is eligible for meeting non-solar RPO.*
2. *PEDA, being the Nodal agency, is directed to upload the formats for monitoring/estimation of energy generated from biomass in biomass co-fired Captive Power Plants and the timelines to be followed by them on its website..... PEDA shall also incorporate the same in the RPO manual for the Obligated Entities.*
3. *The Commission further notes that the data for quantifying the energy produced from biomass in biomass co-firing would need verification/inspection by PEDA & PSPCL. Accordingly, the Commission is inclined to agree with the PSPCL's contention that benefit for consideration of the same towards fulfilment of Non-Solar RPO shall be made available prospectively.*

Accordingly, the Procedure & Timelines for entities having CPPs with co-firing of biomass is added to the RPO manual and the existing Format-C of the RPO Manual is hereby added with Formats C (1) to C (3) for estimation of energy generated through Co-firing of Biomass in coal based CPPs for compliance of the orders of the Hon'ble Commission are as below:-

**(A) Procedure and documents to be maintained for fuel accounts by the Entity having CPP using coal as fuel alongwith co-firing of biomass for generation of electricity and their submission.**

- i) The GCV measurement point is already specified under the CERC Tariff Regulation 2019. The relevant extract is reproduced below, which shall be adopted by the captive power plants and co-generation power plants.

*“(31) ‘GCV as Received’ means the GCV of coal as measured at the unloading point of the thermal generating station through collection, preparation and testing of samples from the loaded wagons, trucks, ropeways, Merry-Go-Round (MGR), belt conveyors and ships in accordance with the IS 436 (Part-1/ Section 1)- 1964:*

*Provided that the measurement of coal shall be carried out through sampling by third party to be appointed by the generating companies in accordance with the guidelines, if any, issued by Central Government:*

*Provided further that samples of coal shall be collected either manually or through hydraulic augur or through any other method considered suitable keeping in view the safety of personnel and equipment:*

*Provided also that the generating companies may adopt any advance technology for collection, preparation and testing of samples for measurement of GCV in a fair and transparent manner”.*

- ii) The Entity shall maintain separate fuel accounts for coal and each biomass fuel, with opening balance, fuel received during the day, fuel used during the day and closing balance carried forward to next day in Kg and day wise Gross & Net Energy generated in KWH. All such daily data related to the fuel and energy shall be published by the entity on its website. If measurement of Auxiliary consumption is not feasible or is abnormally low, then normative auxiliary consumption as per CERC Generic Tariff Regulations as adopted by PSERC will be taken to arrive at Net energy in line with last proviso of sub para c) of Para 6 of the RPO manual.
- iii) The Entity shall also maintain separate GCV accounts for coal and each bio-mass fuel for each lot of coal/fuel (in kCal/kg),
- iv) The weighted average GCV of the opening balance of fuel stocks, weighted average GCV of each fuel received during the month and weighted average GCV of the closing balance at the end of the month will be worked out by the entity.
- v) These monthly accounts of fuel(s) and GCV, duly signed by the Director/Managing Partner/Owner and Chartered Accountant of the obligated entity shall be published on its website along with the bills towards purchase of coal and each bio-mass fuel.
- vi) These monthly fuel and GCV accounts shall be made available to authorized representative(s) of State Agency and PSPCL on demand. Any authorised representative of State Agency/PSPCL shall be allowed to witness the in-house GCV testing of coal/biomass being carried out by the obligated entity.
- vii) Entity shall keep State Agency and PSPCL informed about the co-firing of biomass with coal.
- viii) PSPCL and /or PEDDA may inspect the premises of the Entity for verification of the usage of fuel(s), stocks of fuel(s) and records being maintained by the Entity at any time. Entity will fully cooperate with the officers deputed for any such verification.

ii) **Timelines to be followed by the Entities.**

- i. The information as detailed in Annexure I & III is required to be submitted to PSPCL & PEDDA on quarterly basis by the Entity having CPP not later than 20<sup>th</sup> day of the start of succeeding quarter of the respective year.
- ii. The backup data sheets for the data submitted to PEDDA/PSPCL for any year will be preserved for at least next two years for cross verification by PSPCL/PEDDA or any auditing agency appointed by PSERC/PSPCL/PEDDA.
- iii. The Entity shall also supply the unabridged annual financial statements of the entity for each preceding year as approved by Board of Directors within 15 days of its submission to SEBI/adoption by the firm as applicable.
- iv. The benefit of consideration of the same towards fulfilment of Non-Solar RPO shall be made available prospectively.

All Obligated Entities having CPPs should follow the above procedure/timelines for submission of information to PEDDA as per directives of PSERC.

Director,  
Punjab Energy Development Agency – State Agency under RPO Regulations,  
Chandigarh.

**In terms of Regulation 42 of the RE Tariff Regulations, the Entity shall furnish a monthly fuel usage & procurement statement duly certified by the Director/ Managing Partner/ Owner and Chartered Accountant for each quarter, along with the monthly energy bill and joint meter reading report submitted to PSPCL.**

(Report for the Quarter 1<sup>st</sup>/2<sup>nd</sup>/3<sup>rd</sup>/4<sup>th</sup>)

1. Name of the Entity	
2. Registered office Address	
3. Location of the Project	
4 E-mail ID & Contact Details	
5. Capacity of CPP (MW)	
6. Date of Commissioning of Project	
7. Connectivity Voltage Level	

**FUEL USAGE & PROCUREMENT STATEMENT FOR THE 1st MONTH OF THE QUARTER**

Description	Units	Paddy Reject	Mustard husk	Paddy Straw	Wood Chips	Maize Cobs	Charcoal	Rice husk	Sugar Mill Reject	Any other biomass (please specify)	TOTAL Quantity / Weighted Average GCV (Biomass)	Abbreviation (Abbr.)	Total Quantity/ Weighted Average GCV (Coal)	Abbr.
Opening Stock Quantity	Kg											Qob		Qoc
Weighted Average GCV of Opening Stock	Kcal/Kg											Gob		Goc
Fuel Receipt Quantity	Kg											Qrb		Qrc
Weighted Average GCV of Fuel Received	Kcal/Kg											Grb		Grc
Closing Stock Quantity	Kg											Qcb		Qcc
Weighted Average GCV of Closing Stock	Kcal/Kg											Gcb		Gcc

FUEL USAGE & PROCUREMENT STATEMENT FOR THE 2ND MONTH OF THE QUARTER

Description	Units	Paddy Reject	Mustard husk	Paddy Straw	Wood Chips	Maize Cobs	Charcoal	Rice husk	Sugar Mill Reject	Any other biomass (please specify)	TOTAL Quantity / Weighted Average GCV (Biomass)	Abbreviation (Abbr.)	TOTAL Quantity / Weighted Average GCV (Coal)	Abbr.
Opening Stock Quantity	Kg											Qob		Qoc
Weighted Average GCV of Opening Stock	Kcal/Kg											Gob		Goc
Fuel Receipt Quantity	Kg											Qrb		Qrc
Weighted Average GCV of Fuel Received	Kcal/Kg											Grb		Grc
Closing Stock Quantity	MT											Qcb		Qcc
Weighted Average GCV of Closing Stock	Kcal/Kg											Gcb		Gcc

FUEL USAGE & PROCUREMENT STATEMENT FOR THE 3RD MONTH OF THE QUARTER

Description	Units	Paddy Reject	Mustard husk	Paddy Straw	Wood Chips	Maize Cobs	Charcoal	Rice husk	Sugar Mill Reject	Any other biomass (please specify)	TOTAL Quantity / Weighted Average GCV (Biomass)	Abbreviation (Abbr.)	TOTAL Quantity / Weighted Average GCV (Coal)	Abbr.
Opening Stock Quantity	Kg											Qob		Qoc
Weighted Average GCV of Opening Stock	Kcal/Kg											Gob		Goc
Fuel Receipt Quantity	Kg											Qrb		Qrc
Weighted Average GCV of Fuel Received	Kcal/Kg											Grb		Grc
Closing Stock Quantity	Kg											Qcb		Qcc
Weighted Average GCV of Closing Stock	Kcal/Kg											Gcb		Gcc

Signature & Stamp of the Chartered Accountant

Signature & Stamp of the Authorized Signatory

**Computation of Energy Generated from Co-firing of Renewable Fuel (Biomass)**

Quarter/ Year : .....

1. Name of the Entity : .....

2. Registered office Address : .....

3. Location of the Project : .....

4 E-mail ID & Contact Details : .....

5. Capacity of CPP (MW) : .....

6. Date of Commissioning of Project\* : .....

7. Connectivity Voltage Level : .....

8. Name of Conventional Fuel Used : .....

9. Name of RE Fuel Used : .....

<b>A. RE Fuel (Biomass)</b>					1st Month of the quarter	2nd Month of the quarter	3rd Month of the quarter
Opening balance of RE Fuel (Biomass) for the Month							
Weighted average Gross Calorific Value (GCV) of opening balance of bio-mass		$Q_{ob}$	Kg				
Quantity of bio-mass received during the month		$G_{ob}$	kCal/kg				
Weighted average GCV of bio-mass received during the month		$Q_{rb}$	Kg				
Closing stock of bio-mass		$G_{rb}$	kCal/kg				
Weighted average GCV of the closing balance of bio-mass		$Q_{cb}$	Kg				
		$G_{cb}$	kCal/kg				

<b>B. Conventional Fuel (Coal)</b>					
Opening balance of Conventional Fuel (coal) for the Month	$Q_{oc}$	Kg			
Weighted average GCV of opening balance of Conventional Fuel	$G_{oc}$	kCal/kg			
Quantity of Conventional Fuel received during the month	$Q_{rc}$	Kg			
Weighted average GCV of Conventional Fuel received during the month	$G_{rc}$	kCal/kg			
Closing stock of Conventional Fuel	$Q_{cc}$	Kg			
Weighted average GCV of the closing balance of Conventional Fuel	$G_{cc}$	kCal/kg			

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Signature & Stamp of the Authorized Signatory

Note:

\*Entity to submit proof of date of commissioning during 1st quarterly return.

Quarterly return to be submitted separately for each generating unit of the entity.

**Computation of Energy Generated from Co-firing of Renewable Fuel (Biomass)**

Quarter/ Year: .....		1st Month of the quarter	2nd Month of the quarter	3rd Month of the quarter
Gross electrical energy generated at Generator Terminal during the month	E(GT)*	kWh		
Quantum of Heat of Biomass Fuel Used during the month $Q_b \times G_b$ (kCal) = {opening balance of bio-mass (kg) X weighted average GCV of opening balance of bio-mass (kCal/kg)} + {quantity of bio-mass received during the month (kg) X weighted average GCV of bio-mass received during the month (kCal/kg)} - {closing stock of bio-mass (kg) X weighted average GCV of the closing balance of bio-mass (kCal/kg)}	$Q_b \times G_b = \{Q_{ob} \times G_{ob}\} + \{Q_{rb} \times G_{rb}\} - \{Q_{cb} \times G_{cb}\}$	kCal		
Quantum of Heat of Coal Used during the month $Q_c \times G_c$ (kCal) = {opening balance of coal (kg)X weighed 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)}	$Q_c \times G_c = \{Q_{oc} \times G_{oc}\} + \{Q_{rc} \times G_{rc}\} - \{Q_{cc} \times G_{cc}\}$	kCal		
Electrical energy generated by RE fuel (bio-mass) at Generator terminal during the month, Eb(G)	$E_b(G) = \{[(Q_b \times G_b) / ((Q_c \times G_c) + (Q_b \times G_b))] \times E(GT)\}$	kWh		
Total Energy Sent Out (ex-bus) during the month	ESO*^	kWh		
Electrical energy generated by bio-mass ex-bus during the month, Eb (ex-bus)	$E_b \text{ (ex-bus)} = E_b(G) \{1 - [(E(GT) - ESO) / E(GT)]\}$	kWh		

\* Company shall install Trivector Energy Meter(s) with CTS & PTs (as applicable) of make approved by PSPCL having accuracy class of 0.2s after getting the same tested & sealed by PSPCL ME Lab/ concerned PSPCL office.

\*^ ESO will be as per last proviso of sub-para c) of para 6 of RPO Manual

**Signature & Stamp of the Chartered Accountant**

**Signature & Stamp of the Authorized Signatory**