

**RPO Manual
for
DISCOM / CPPs / OA Consumers
(Obligated Entities)
Based on
PUNJAB STATE ELECTRICITY REGULATORY COMMISSION's
(RENEWABLE PURCHASE OBLIGATION AND ITS COMPLIANCE)
REGULATIONS, 2022 AS AMENDED UP TO DATE**

Effective from 01.04.2023

GLOSSARY

Abbreviations	Details
CERC	Central Electricity Regulatory Commission
CGP	Captive Generating Plant
CPP	Captive Power Plant
EA	Electricity Act, 2003 as amended up to date
GCP	Group Captive Plant
GEC	Gross Energy Consumption
IPP	Independent Power Plant
KV	Kilo Volt
KWH	Kilo Watt Hour
MNRE	Ministry of New & Renewable Energy
MOP	Ministry of Power
MU	Million Units
MVA	Mega Volt Ampere
MW	Mega Watt
NLDC	National Load Dispatch Centre
NRSE	New & Renewable Sources of Energy
OA	Open Access
PSERC/Commission	Punjab State Electricity Regulatory Commission
PSPCL	Punjab State Power Corporation Limited
RE	Renewable Energy
REC	Renewable energy Certificate
RPO	Renewable Purchase Obligation
SPV	Solar Photovoltaic

RENEWABLE PURCHASE OBLIGATION (RPO)

This Manual has been prepared as per PSERC (Renewable Purchase Obligation and its compliance) Regulations 2022 and shall be effective from 01.04.2023.

For the period 03.06.2011 to 31.03.2023, the applicable Regulations will be PSERC (Renewable Purchase Obligation and its Compliance) Regulations 2011 and RPO Manual (as amended from time to time) issued there under as available on PSPCL and PEDDA websites.

1) What is RPO?

It is the requirement specified by the Punjab State Electricity Regulatory Commission (Here in after referred to as Commission) under clause (e) of sub-section (1) of section 86 of the Act, for the obligated entities to purchase electricity from renewable energy sources. Thus, it is the obligation to purchase minimum level of renewable energy out of the total consumption of electricity (energy input in the system of obligated entity at its boundary) by the Obligated Entity.

2) PSERC RPO Regulation

Commission, vide notification dated 12thDecember, 2022 has notified Regulations for the Renewable Purchase Obligation and its compliance in the State of Punjab (here in after referred to as RPO Regulations 2022).

3) State Agency

Commission, vide Regulation 5 of the RPO Regulations 2022, has designated Punjab Energy Development Agency (PEDDA) as State Agency to undertake various functions as provided under RPO Regulations 2022.

4) Objective

The main objective of RPO Regulations 2022 is the promotion of generation of electricity from renewable sources and is to specify a percentage for procurement of energy generated from such sources on the basis of total consumption of electricity by an Obligated Entity.

5) Eligible Renewable Energy Sources

Energy generation from all types of renewable energy sources as recognized or approved by the Ministry of New and Renewable Energy Sources (MNRE), shall be considered as eligible renewable energy sources.

The Eligible renewable energy sources shall include without limitation the following: -

- a. Non-fossil fuel (including Bagasse) based co-generation projects
- b. Wind Energy
- c. Biomass Power based on Rankine cycle technology
- d. Biomass Gasifier based power
- e. Biogas based power
- f. All Hydro Power including Large Hydro Projects (LHPs), Pumped Storage Projects (PSPs) and Small Hydro Projects (SHPs)
- g. Municipal Waste based Power
- h. Solar PV and solar thermal power
- i. Geothermal Power
- j. Other hybrid technologies including renewable-renewable or renewable component of renewable-conventional sources for which renewable technology is approved by MNRE.
- k. Any other source as may be recognized or approved by State Commission/MNRE.

Provided that generation from grid connected renewable energy sources with installed capacity as may be specified by the Commission from time to time shall alone be considered as eligible renewable energy sources, provided suitable metering arrangement duly sealed by PSPCL is established by such renewable energy project.

Provided further that the RE projects registered under REC Mechanism notified by CERC will not be eligible to get their generation counted towards RPO.

6) Obligated Entities

“Obligated Entity” refers to the entities mandated, under clause (e) of sub-section (1) of section 86 of the Act, to fulfill the Renewable Purchase Obligation, which includes distribution licensee, open access consumer and captive user.

The ‘captive user’ refers to any person who owns a grid-connected Captive Generating Plant based on conventional fuel with installed capacity of 1 MW and above, or such other capacity as may be specified by the Commission from time to time, and consumes electricity generated from such Plant for his own use.

Provided that own generation (excluding auxiliary consumption) from conventional sources shall be metered for which generator shall install Trivector Energy Meter(s) and CTs/PTs as applicable of make approved by PSPCL having accuracy class of 0.2s and get these sealed by PSPCL officers. Provided further that for compliance of RPO by CPPs/CGPs generating power at LT voltage level, till the time LT Trivector Energy Metering equipment of 0.2S accuracy class are not available / their make is approved by PSPCL, CPPs/ CGPs can install Trivector Energy Metering equipment of make approved by PSPCL having accuracy class of 0.5s.

Provided further that for the purpose of CPP/ CGP (**Format -IV to VII**), the auxiliary consumption shall be either actual (wherever metered) or normative, whichever is lower. Normative auxiliary consumption shall be 8% for coal-based plants, 2.75% for gas-based plants in combined cycle mode and 12% for DG sets.

Agency nominated by the Commission shall check the status of all CPPs/CGPs every year as per Procedure for verification of Captive status in accordance to requirements in Rule 3 of the Electricity Rules, 2005 and Regulation 4.13 of Punjab State Electricity Regulatory Commission (Harnessing of Captive Power Generation) Regulations, 2022.

The “open access consumer” refers to any person having a contract demand of 1 MW and above, or such other capacity as may be specified by the Commission from time to time, and who consumes electricity procured from conventional fuel-based generation through open access.

7) Renewable Purchase Obligation (RPO)

Every obligated entity shall meet at least a part of its consumption of electricity from renewable energy (RE) sources as specified below:

Financial Year	RPO (%)
2023-24	27%
2024-25	30%
2025-26	33%
2026-27	36%
2027-28	39%
2028-29	41%
2029-30	43%

8) Mode of RPO Fulfillment

- i). RPO may be met by energy produced from any RE power project. Provided that:
- (a) RPO shall be calculated in energy terms as a percentage of total consumption of electricity by an obligated entity.
 - (b) Hydro power imported from outside India shall not be considered for meeting the RPO.
 - (c) The energy including free power being provided to the State (not that contributed for Local Area Development) from all HPPs (Hydro Power Projects including Pump Storage Projects and Small Hydro Projects) will be considered for fulfillment of RPO.
 - (d) The Solar/wind energy alongwith/through storage will also be considered for fulfillment of RPO.
 - (e) The renewable energy purchased through bundled power shall qualify for RPO compliance to the extent of renewable energy content in the same.
 - (f) The renewable energy generated from co-firing of biomass in thermal power plants/captive generating plants shall be considered as per the methodology specified by the Central Commission. Procedure/Methodology for estimating the energy generated from co firing of biomass in coal based captive power plants is attached as **Format XI**.
 - (g) The renewable energy generated by non-obligated entities under the Gross-Metering, Net-Billing and Net-Metering arrangement shall qualify towards compliance of RPO of the distribution licensee of the area.
- ii). The RPO for captive users of Captive Generation Plants (CGPs) commissioned before 01.04.2016 shall be at the level specified by the Commission for FY 2015-16 and for those commissioned from 01.04.2016 onwards shall be as specified by the Commission for the year of commissioning. In case of any augmentation, in its capacity, the RPO for the augmented capacity shall be as applicable for the year of the augmentation.

iii). Compliance/Fulfilment of RPO:

- A) An Obligated entity may consume renewable energy as per its requirement/RPOs by one or more of the following methods specified in the Electricity (Promoting Renewable Energy through Green Energy Open Access) Rules, 2022:
- (i) Own/Captive Generation;
 - (ii) Through Open Access;
 - (iii) By requisition from distribution licensee, which shall procure such quantity of renewable energy and supply it at the tariff, determined separately by the Commission, which shall comprise of the average

pooled power purchase cost of the renewable energy, cross-subsidy charges if any, and service charges covering the prudent cost of the distribution licensee for providing the energy. Provided that:

- a. The consumer shall have flexibility to give separate requisition for solar and non-solar;
- b. Any requisition from a distribution licensee shall be for a minimum period of one year;
- c. The quantum shall be pre-specified for at least one year;
- d. The energy purchased from distribution licensee or from RE sources other than distribution licensee in excess of RPO of obligated entity shall be counted towards RPO compliance of the distribution licensee; Provided that, the credit for surplus, if any, accruing in RPO compliance of the distribution licensee shall be carried over to the next year.
- e. The distribution licensee shall give green certificate on yearly basis to the consumers for the renewable energy supplied by the licensee to consumer on his request beyond the RPO of the consumers;
- f. The State Agency may introduce the concept of rating of the consumers of distribution licensee, based on the percent of renewable energy purchased by such consumers.

Commission is determining the tariff of such renewable energy to be supplied by PSPCL for which tariff order of the relevant year issued by the Commission may be referred.

- (iv) By purchasing green hydrogen or green ammonia. The quantum of such green hydrogen or green ammonia would be computed by considering the equivalence to the green hydrogen or green ammonia produced from one MWh of electricity from the RE sources, as per the norms notified by the Central Commission;
- (v) By purchasing of certificates in accordance with the applicable regulations;
- (vi) Any other sources, as may be, determined by the Central Government.

Provided further that the quantum of RE power on which REC benefits has been availed by the Obligated Entity shall not be eligible for RPO fulfillment.

B) RPO Fulfillment through Renewable Energy Certificates (REC)

One REC Certificate is equivalent to 1000 KWH. These RECs can be purchased by obligated entities through CERC approved power exchanges or through CERC approved traders in order to fulfill their RPO obligation.

An RE generator including an eligible CPP/CGP shall be permitted to retain the RECs for offsetting its RPO as a consumer subject to certification and verification by the concerned State Agency as per provisions of CERC (Terms and conditions for RECs for Renewable Energy Generation) Regulations 2022 and the procedure framed there under.

9) RPO Data Reporting by Obligated Entities

Every obligated entity shall submit the details of its consumption of electricity and the compliance towards fulfillment of its RPO on quarterly/annual basis to the State Agency (PEDA), as per the schedule and in the manner prescribed by the State Agency from time to time.

As per the directives given by the Commission under Regulation 5(3) of the RPO Regulations 2022, the State Agency has devised this protocol/manual in consultation with PSPCL, CEI and SLDC/STU for collection and verification of information regarding RPO and to compute, reconcile and monitor RPO Compliance by the Obligated Entities. For this purpose, the formats of RPO data submission by obligated entities to the State Agency on regular basis have also been devised. These data formats are of two types: -

a) Quarterly RPO data reporting, and

b) Yearly Final RPO data reporting.

These RPO data reporting formats are attached for distribution licensees (**Format I to III**) and for CPPs & OA consumers (**Format IV to VII**). Every Obligated Entity shall submit necessary source wise details regarding total consumption of electricity and power purchase from renewable energy sources or RECs etc. towards fulfillment of its RPO on quarterly and annual basis to the State Agency in the prescribed formats as per time lines detailed in para 13 below.

For any delay in submission of the requisite data to the State Agency beyond the timeline, the defaulting obligated entity shall be required to deposit a late fee of Rs. 1000/- per day of delay, under Regulation 6 of RPO Regulations 2022 in the following account: -

Name of Account – Punjab Energy Development Agency

Account No. – 923010011396887

Name of Bank – Axis Bank

Branch – Sector 35-B, Chandigarh

IFSC Code – UTIB0000041

MICR Code – 160211010

10) Effect of Default by Obligated Entities

(I) An OE (including Distribution licensee) failing to fulfill its Renewable Purchase Obligation (RPO) during any year shall be liable to deposit an amount, within 90 days of closure of the year, equivalent to the product of shortfall in RPO compliance and the maximum clearance price of the Certificates discovered in the Power Exchange during the said year, into Account No. detailed above in Para-9.

Any delay in deposit shall attract Delayed Payment Charge at the marginal cost of funds based on lending rate (MCLR) for one year of the State Bank of India, as applicable on the 1st April of the year in which the period lies, plus five per cent and in the absence of marginal cost of funds based lending rate, any other arrangement that substitutes it.

(II) Non-payment of Late fee/Amount by an obligated entity as per the provisions of these Regulations shall be treated as a violation of its license/connectivity conditions.

Provided that, on receipt of information about the default by an obligated entity from the State Agency, the SLDC/STU and/or distribution licensee, as the case may be, shall proceed to initiate action for violation of its conditions of license or connectivity conditions, which includes but not limited to withdrawal of NOC/permission for open access and/or disconnection etc. after following the procedure as per law.

(III) Without prejudice to the above, the Commission on its own motion or on the recommendation of the State Agency may also initiate action against such entity under Section 142 of the Act.

Provided that, any penalty payable under these Regulations and/or Section 142 of the Act, if not paid, may be recovered as per Section 170 of the Electricity Act 2003.

(IV) However, if any obligated entity files a Petition before PSERC for carry forward of RPO or time extension for compliance of RPO during the year or immediately after the closure of Year, the provisions of Para (I) to (III) will not be applicable and orders of the PSERC will prevail as and when issued.

11) Exemption to RE generators

RE based CPPs/CGPs and OA consumers sourcing power from RE generators shall submit proof of using NRSE fuels / technologies during the quarter /year for grant of exemption from RPO compliance.

For establishing RE technology, they shall submit the permission to establish the project issued by PEDA and approval of PSPCL.

For usage of RE fuels they shall submit the details of fuel used, energy generated, energy consumed as a captive generator and energy sold if any during the previous quarter/year etc., duly certified by CA as per **Format - X**.

12) Exemption to Co-generation Projects

Obligated entity having Co-generation process based power project using conventional fuel shall qualify for RPO exemption under co-generation category if it fulfils the qualifying criteria using topping cycle mode of co-generation as per Regulation 4 (d) of CERC (Terms and Conditions for Tariff Determination of Renewable Energy) Regulations 2020 issued on dated 23.06.2020 and satisfying the condition of co-generation process using two or more forms of useful energy (including Electricity) as per Section 2 (12) of EA 2003.

Relevant Clause 4 (d) of CERC Regulations dated 23.06.2020 is reproduced as under for ready reference:

"4 d) Non-fossil fuel based co-generation project - The project that uses new plant and machinery, and is based on topping cycle mode of co-generation. Topping cycle mode of co-generation Any facility that uses non-fossil fuel input for the power generation and also utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously: Provided that for the co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half the useful thermal output be greater than 45% of the facility's energy consumption, during crushing season.

Explanation- For the purposes of this clause,

(a) 'Useful power output is the gross electrical output from the generator. There will be an auxiliary consumption in the cogeneration plant itself (e.g., the boiler feed pump and the FD/ID fans). In order to compute the net power output, it would be necessary to subtract the auxiliary consumption from the gross output. For simplicity of calculation, the useful power output is defined as the gross electricity (kWh) output from the generator.

(b) 'Useful Thermal Output' is the useful heat (steam) that is provided to the process by the cogeneration facility.

(c) 'Energy Consumption' of the facility is the useful energy input that is supplied by the fuel (normally bagasse or other such biomass).

(d) 'Topping Cycle' means a co-generation process in which thermal energy produces electricity followed by useful heat application."

Section 2 (12) of EA 2003 is also Extracted as under for ready reference:

"Cogeneration" means a process which simultaneously produces two or more forms of useful energy (including electricity)."

For claiming the exemption, the Obligated entity shall have to submit a request along with the DPR of the Power Project including the Heat Mass balance Diagram, Co generation Efficiency calculations, Commissioning Certificate of the Co-gen project and Single Line Diagram etc. to the State Agency (PEDA) for verification and certification of compliance of cogeneration cycle Exemption shall have to be taken again for any change in cogeneration project configuration.

13) Process Flow Chart for collection & verification of data of CPP/OA consumers

Quarterly updated list of grid connected CPP/CGPs of capacity 1 MW & above already operating in the state will be sent by CEI office to PSPCL. Similarly, quarterly list of OA consumers having a contract demand of 1 MW and above shall be provided by SLDC to PSPCL. These quarterly updated CPP/CGP/OA list to be uploaded by the PSPCL on its website by 8th day of the succeeding month.



Quarterly RPO data to be supplied by Obligated Entities to PSPCL/PEDA by 13th day of the succeeding month, compilation of data & preparing consolidated report by PSPCL and Supplied to State Agency by 23th day of the succeeding month.

PEDA to issue Notices to Obligated Entities failing to supply data by 13th day of the succeeding month, the data will be accepted along with penalty of Rs. 1000 per day of the delay.



Checking of data for compliance by the obligated entities for RPO by PEDA and quarterly/ yearly report of cumulative compliance to be uploaded by PEDA by 27th day of the succeeding month.



PEDA to serve notices to the defaulting obligated entities for shortfall in fulfillment of the mandated RPO compliance by the 29th day of the succeeding month.

Defaulting Obligated Entities shall be liable to deposit an amount equivalent to the product of shortfall in RPO compliance and the maximum clearance price of the Certificates discovered in the Power Exchange during the said year within 90 days of the closure of the year.



Submission of final RPO compliance report by PEDA to PSERC, PSPCL and SLDC by 30th day of the succeeding month/Year for initiating action against the defaulters.

Note: PSPCL shall follow the time lines /shall be liable for penalty as provided in RPO Regulations 2022.

RPO data reporting format for DISCOM for “Energy consumption”.

	Reporting Year 20 -- -- /20 -- --		
	Quarter: - -----		
	DISCOM: Punjab State Power Corporation Limited (PSPCL)		
1	<u>ENERGY CONSUMPTION AT PERIPHERY</u>	Quantum for the quarter (MUs)	Remarks
<u>O</u>	<u>Own Generation</u>	<u>MW</u>	
<u>i</u>	Own Hydro Large projects (Attachment 1)		
<u>ii</u>	Own Hydro SHP (Attachment 2)		
<u>iii</u>	Own Thermal (Attachment 3)		
<u>iv</u>	Share in BBMB (Attachment 4)		
<u>v</u>	Any Other (Attachment 5)		
	Note: Hydro Power Procured from outside India to be excluded		
	Sub Total (O)		
<u>P</u>	<u>Purchase from other generating companies /Intermediaries.</u>		
<u>i</u>	Purchase from Central Sector Thermal/gas/Nuclear (Attachment 6)		
<u>ii</u>	Purchase from Central Sector Large Hydro (Attachment 7)		
<u>iii</u>	Purchase from IPPs in the state (Attachment 8)		
<u>iv</u>	Purchase from Renewable Sources within the state (Attachment 9)		
<u>v</u>	Purchase from Renewable Sources outside the state (Attachment 10)		
<u>vi</u>	Purchase from Power exchange/Traders/Other States (Attachment 11)		
<u>vii</u>	Any Other (Attachment 12)		
	Sub Total (P)		
<u>S</u>	<u>Sale to other Licensees/ Intermediaries</u>		
<u>i</u>	Net banking in/outward (+ve/-ve) (Attachment 13)		
<u>ii</u>	Sale on Power exchange (Attachment 14)		
<u>iii</u>	Sale to other licensees (Attachment 15)		
<u>iv</u>	Any Other (Attachment 16)		
	Sub Total (S)		
	Total Energy Consumption for the Quarter (O+P-S)		
<u>2</u>	RPO (-- % of Energy Consumption) for the quarter carried to Format II (RENEWABLE ENERGY AVAILABLE FOR RPO COMPLIANCE)		
Declaration: We hereby declare that the energy consumption & R.E procurement data submitted above does not includes the energy consumption & R.E procurement data of CPP /OA Consumers at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.			

Sign and Seal of authorized signatory

RPO data reporting format for DISCOM for “RENEWABLE ENERGY AVAILABLE FOR RPO COMPLIANCE”.

Reporting Year 20 -- --/20 -- --				
Quarter:- -----				
DISCOM: Punjab State Power Corporation Limited (PSPCL)				
Sr. No.	Description	MW	Quantum for the quarter (MUs)	Remarks
1	Own Generation			
i	Own Hydro Large projects (As per Attachment 1)			
ii	Own Hydro SHP (As per Attachment 2)			
iii	Share in BBMB (As per Attachment 4)			
iv	Own Solar (Ground Mounted/Rooftop) (as per Attachment 17)			
v	Any Other (Attachment 18)			
	Sub Total (1)			
2	Purchase from other Renewable Sources / Licensees			
i	Purchase from Renewable Sources within the state (As per Attachment 9)			
ii	Purchase from Renewable Sources outside the state (As per Attachment 10)			
iii	Purchase of green energy from Power Exchange			
iv	Any Other (Attachment 19)			
	Sub Total (2)			
3	Purchase of RECs (As per Attachment 20)			
4	Solar Power of Non obligated Entities under Gross Billing/ Net Billing/ Net Metering (As per Attachment 21)			
5	Sale of Green/RE Power			
i	Green Power Supplied to consumers under Para 4. (1). (c)&(d) of RPO Regulations 2022			
ii	Sale of Green Energy at Power Exchange			
	Sub Total (5)			
6	Total Renewable Energy Available for compliance (1+2+3+4-5)			
7	RPO for the quarter carried from Format I			
8	Surplus /Shortfall of the quarter (+ve /-ve) (6-5)			
9	RPO of the previous quarter (+ve /-ve)			
10	Cumulative RPO Ending the quarter (+ve /-ve) (8+9)			
Declaration: We hereby declare that the energy consumption & R.E procurement data submitted above does not includes the energy consumption & R.E procurement data of CPP /OA Consumers at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.				

Sign and Seal of authorized signatory

RPO data reporting format for DISCOM for “Abstract of RPO Compliance”.

DISCOM: Punjab State Power Corporation Limited (PSPCL)

Fiscal Year (-----)	Input Energy available to PSPCL at its boundary for distribution (including hydro)	RPO Obligation as specified by the Commission		Own RE Generation	Purchase from other Renewable Sources / Licensees	Purchase of RECs	Solar Power of Non obligated Entities under Gross Billing/ Net Billing/ Net Metering	Sale of Green/RE Power	Total RPO Achievement	RPO Shortfall(-ve)/ Surplus(+ve) of current FY	Cumulative RPO Compliance (Shortfall(-ve)/ Surplus(+ve))
		3	4								
1	2	3	4	5	6	7	8	9	10=5+6+7+8-9	11=10-4	12
	(MUs)	%age	(MUs)	MUs	MUs	MUs	MUs	MUs	MUs	MUs	MUs
Q-1											
Q-2											
Q-3											
Q-4											
Total for the Year											

Declaration: We hereby declare that the energy consumption & R.E procurement data submitted above does not includes the energy consumption & R.E procurement data of CPP /OA Consumers at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.

Sign and Seal of authorized signatory

RPO data reporting format for Captive Users of conventional power by consumers having CGPs/GCPs

Reporting Year 20 -- -- /20 -- --

Quarter:- -----

**Name and Address along with the PSPCL Account No of the Obligated entity (Captive user)
Sanctioned Contract Demand/Connected Load**

<u>ENERGY CONSUMPTION</u>					
1	<u>ENERGY CONSUMPTION</u>	Initial Reading MUs	Final Reading MUs	Quantum (MUs)	Remarks
<u>O</u>	<u>Own Generation from CGPs/ Group Captive Conventional Fuel based plants (Excluding Auxiliary)</u>	<u>MW</u>			
	Source 1				
	Source 2				
				
	Sub Total (O)				
<u>P</u>	<u>Procurement through Intermediaries from Conventional Fuel based Plants under captive mode.</u>				
	Source 1				
	Source 2				
				
	Sub Total (P)				
<u>S</u>	<u>Sale of conventional power from CGPs/GCPs to Licensees/ Intermediaries</u>				
	Licensee 1				
	Licensee 2				
				
	Inter 1				
	Inter 2				
				
	Sub Total (S)				
	Total Energy Consumption for the Quarter -(O+P-S)				
<u>2</u>	RPO Obligation (.....% of EC) for the quarter carried to Format VI (RENEWABLE ENERGY AVAILABLE FOR RPO COMPLIANCE)				

Declaration: We hereby declare that the energy consumption data submitted above is at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.

Sign and Seal of authorized signatory of Company

Sign and Seal of C.A.

Name/Address/Mobile No.....

Name/Address/Mobile No-----

RPO data reporting format for Conventional Power procured as Open Access Consumer.

Reporting Year 20 --- /20 ---

Quarter: - -----

Name and Address alongwith PSPCL Account No of Obligated Entity (OA consumer)

POA No.....

Sanctioned Contract demand /Connected Load.....

OA capacity approved (KW).....

ENERGY CONSUMPTION (Based on schedule of energy as per SLDC data)			
1	ENERGY CONSUMPTION	Quantum (MUs)	Remarks
<u>O</u>	<u>Own Generation from Conventional Fuel based plants not complying with Electricity Rules 2005 (Excluding Auxiliary)</u>		
	Source 1		
	Source 2		
		
	Sub Total (O)		
<u>P</u>	<u>Purchase of conventional fuel based power from IPPs/Intermediaries through Open Access.</u>		
	Source 1		
	Source 2		
		
	Sub Total (P)		
<u>S</u>	<u>Sale to other Licensee/ Intermediaries</u>		
	Licensee 1		
	Licensee 2		
		
	Inter 1		
	Inter 2		
		
	Sub Total (S)		
	Total Energy Consumption for the Quarter -(O+P-S)		
<u>2</u>	RPO Obligation (..... % of Energy Consumption) for the quarter carried to Format VI (RENEWABLE ENERGY AVAILABLE FOR RPO COMPLIANCE)		

Declaration: We hereby declare that the energy consumption data submitted above is at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.

Sign and Seal of authorized signatory of Company

Sign and Seal of C.A.

Name/Address/Mobile No.....

Name/Address/Mobile No-----

RPO data reporting format for CGPs/Open Access Consumers for “RENEWABLE ENERGY AVAILABLE FOR RPO COMPLIANCE”.

Reporting Year 20 -- -- /20 -- --

Quarter: - -----

Name and Address alongwith PSPCL Account No of Obligated Entity.....

POA No (In case of OA consumer)

<u>Renewable Energy Procurement</u>			
Eligible Person Name: Captive Users/ Open Access Consumers			
O	<u>Own Generation from Renewable sources</u>	Quantum (MUs)	Remarks
	Source 1		
	Source 2		
		
	Sub Total (O)		
P-1	<u>Purchase from other Renewable Sources</u>		
	Source 1		
	Source 2		
		
	Sub Total (P1)		
P-2	<u>Purchase through RECs</u>		
S	<u>Sale of Renewable Energy to other Persons</u>		
	Party- 1		
	Party- 2		
		
	Sub Total (S)		
1	Total Renewable Energy Available for compliance (O) + (P1) + (P2) - (S)		
2	RPO for the quarter carried from Format IV (For CPPs) or V (for OA)		
3	Surplus /Shortfall of the quarter (+ve /-ve) (1-2)		
4	RPO of the previous quarter (+ve /-ve)		
5	Cumulative RPO Ending the quarter (+ve /-ve) (3+4)		

Declaration: We hereby declare that the Renewable Energy Procurement data submitted above is at our periphery. Further the compilation of the data is as per PSERC RPO Regulations 2022.

Sign and Seal of authorized signatory of Company

Sign and Seal of C.A.

Name/Address/Mobile No.....

Name/Address/Mobile No-----

RPO data reporting format for CGPs/Open Access Consumers for “Abstract of RPO Compliance”.

Reporting Year 20 -- -- /20 -- --

Name of the Company/Organization alongwith PSPCL Account No: -----

Obligated Entities [Tick (v) the appropriate option]: Captive User (CPP): () or Open Access Consumer: ()

For CPP: Plant Installed Capacity (in MW): Captive Use from power plant in MW: ----- Sale outside/third party (in MW) -----) Fuel-----

For OA Consumer: Sanctioned Contract Demand /Connected Load :----- OA Approval-----MW

Fiscal Year (_____)	Total Energy Consumption (from captive source in case of Captive user) / from open access source in case of OA consumer)	RPO					
		RPO Target for Respective years (E)	Energy actually procured against Target (F)			Total Procured (G)	Shortfall if Any (H)
			MU			MU	MU
			Renewable Energy	REC	RE power +REC		
Q1							
Q2							
Q3							
Q4							
Total for the year							

Sign and Seal of authorized signatory of Company

Name/Address/Mobile No.....

Note: 1) Detailed information about RE generators from whom RE purchased and/or REC purchased if any shall be submitted along with report for confirmation purpose.

2) In case of OA consumer copy of open access permission for concerned period shall be submitted.

3) In case of CPP copy of grid connectivity permission shall be submitted.

Sign and Seal of C.A.

Name/Address/Mobile No-----

Format -VIII

(To be furnished and uploaded on website by PSPCL)

Format for quarterly updated details of CPPs/CGPs to be uploaded on PSPCL website

Reporting Year:

Reporting Quarter

S.No	Name of CPP/CGP unit (Self Use)	Address / Location of Self Use / CPP unit	Name & Designation of Contact Person, Email-id and Mobile No.	CPP /CGP generation capacity & brief details	Details of approval granted by PEDDA	Details of approval granted by PSPCL	Date of commissioning/ Synchronisation (DD/MM/YYYY)	Source of generation (RE fuel type / technology)	Voltage level		Grid connection status (whether Regular or Standby Supply)	Source wise Energy Consumption for the previous financial year	Consumer Account number and name of Sub Division /Division/ Circle of PSPCL	Meter location and meter type (Marked on the Single Line Diagram to be provided)
									Generator Terminals (in KV)	Grid connection (in KV)				
1														
2														
.														
.														
N														

Format for quarterly updated details of OA Consumers to be uploaded on PSPCL website

Reporting Year:

Reporting Quarter

S.No	Name of OA Consumer	Address / Location of OA consumer	Details of Contact Person: Name & Designation, Email-id and Mobile No	POA No/ Consumer Account No./ Sub-Division/ Division/ Circle	Capacity for Open Access (in MW) & period for Open Access	OA consumer contract demand (In KVA)	Consumer Voltage level (in KV)	Name & address of source (Generator/ Power Exchange/ co-located)	Source of generation (Specify fuel Type / technology)	Generation Voltage level (In KV)	Energy wheeled under Open Access during the previous financial year
1											
2											
3											
.											
.											
N											

Format -X

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

Name and Address of Company/developer

			1 st month of the quarter	2 nd month of the quarter	3 rd month of the quarter	Total
1	Opening fuel stock (tonnes)	Biomass Fuel				
		Fossil Fuel				
2	Quantity of fuel procured during the month (in tonnes) for power generation	Biomass Fuel				
		Fossil Fuel				
3	Cumulative quantity of fuel procured till the end of that month (in tonnes) during the current year	Biomass Fuel				
		Fossil Fuel				
4	Quantity of fuel consumed during the month (in tonnes) for power generation	Biomass Fuel				
		Fossil Fuel				
5	Cumulative quantity of fuel consumed till the end of that month (in tonnes) during the year	Biomass Fuel				
		Fossil Fuel				
6	Actual energy generation during the month	Gross (Units)				
		Net (Units)				
7	Cumulative actual energy generation until the end of that month during the year	Gross (Units)				
		Net (Units)				
8	Closing fuel quantity (tonnes) for each fuel type available at the power plant	Biomass Fuel				
		Fossil Fuel				

**Sign and Seal of authorized signatory of Company
Name/Address/Mobile No.....**

**Sign and Seal of C.A.
Name/Address/Mobile No-----**

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

The Hon'ble Punjab State Electricity Regulatory Commission (PSERC), in its order dated 24.09.2021 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. The **Formats XI (1), XI(2) & XI(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 attached 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 4 of Para 6 (“Obligated Entities”) of the RPO manual.
- iii) The Entity shall also maintain separate GCV accounts for coal and each biomass 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 authorized 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.

B. Timelines for biomass pellet information to be followed by the Entities.

- i. The information as detailed in Format XI (I) & XI (III) is required to be submitted to PSPCL & PEDDA on quarterly basis by the Entity having CPP not later than 20th 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.

Format – XI(1)

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 1st/2nd/3rd/4th)

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 AverageGCV 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 AverageGCV of Fuel Received	Kcal/Kg											Grb		Grc	
Closing Stock Quantity	MT											Qcb		Qcc	
Weighted AverageGCV 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	Kcal/Kg											Grb		Grc	

GCV of Fuel Received														
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

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

B. Conventional Fuel (Coal)					
Opening balance of Conventional Fuel (coal) for the Month	Q_{oc}	Kg			
Weighed 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			

Signature & Stamp of the Chartered Accountant

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, $E_b(G)$	$E_b(G) = [(Q_b \times G_b) / ((Q_c \times G_c) + (Q_b \times G_b))] \times E(GT)$	kWh			
Total Energy Sent Out (ex-bus) during the month	$ESO^{*\wedge}$	kWh			
Electrical energy generated by bio-mass ex-bus during the month, E_b (ex-bus)	E_b (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