



# Operational Guidelines for Renewable Consumption Obligation Compliance Mechanism



Bureau of Energy Efficiency

# Operational Guidelines for Renewable Consumption Obligation Compliance Mechanism

Published by  
Bureau of Energy Efficiency  
4th Floor, Sewa Bhawan, RK Puram, New Delhi, India

Version 1.2

No portion (graphics or text) of this document may be reproduced, translated, or transmitted in any form or manner by any means – including but not limited to electronic copy, photocopy, or any other information storage and retrieval system without explicit written consent from Bureau of Energy Efficiency, New Delhi

All right reserved  
Printed in New Delhi, India

**Disclaimer:** These operational guidelines are prepared with an intent to provide guidance that complements the provisions on RCO stipulated in the Ministry of Power Notification dated 27 September 2025. In case anything mentioned herein contradicts with the provisions of the said Notification, the MoP Notification will prevail in all such cases.

# Table of Contents

Abbreviations	1
Background & Introduction	2
Definitions	4
Renewable Consumption Obligations: Minimum share of consumption of eligible non-fossil sources	6
RCO framework: Institutional Mechanism, Roles and Responsibilities	13
Eligible energy sources for RCO Compliance	15
Modes of RCO Compliance	17
Monitoring, Verification and Reporting	22
Penalties and adjudication	29
Check verification	30
Annexures	34

# 1. Abbreviations

**AEA:** Accredited Energy Auditor

**APC:** Auxiliary power consumption

**BEE:** Bureau of Energy Efficiency

**BTM:** Behind the meter

**CEA:** Central Electricity Authority

**CERC:** Central Electricity Regulatory Commission

**CGP:** Captive Generation Plant

**Co-gen:** Co-generation

**COP:** Conference of parties

**CPP:** Captive Power Plant

**DC:** Designated Consumer

**DRE:** Distributed Renewable Energy

**EAC:** Energy Attribute Certificates

**EC Act:** Energy Conservation Act

**ESS:** Energy Storage System

**GDP:** Gross Domestic Product

**JERC:** Joint Electricity Regulatory Commission

**MCP:** Market Clearing Price

**MNRE:** Ministry of New and Renewable Energy

**MoP:** Ministry of Power

**NDC:** Nationally Determined Contribution

**RCO:** Renewable Consumption Obligation

**RE:** Renewable Energy

**REC:** Renewable Energy Certificate

**REGS:** Renewable Energy Generating Station

**RPO:** Renewable Purchase Obligation

**SDA:** State Designated Agency

**SERC:** State Electricity Regulatory Commission

**SLDC:** State Load Despatch Center

**Solar PV:** Solar Photovoltaic

**UNFCCC:** United Nations Framework Convention on Climate Change

**VPPA:** Virtual Power Purchase Agreement

**WHR:** Waste Heat Recovery

**WHRS:** Waste Heat Recovery System

**WHRSG:** Waste Heat Recovery Steam Generator

## 2. Background & Introduction

India's renewable energy expansion program stands as one of the largest globally, driven by robust policy and regulatory support aimed at enhancing both demand and supply within the renewable energy sector. In this context, the Renewable Consumption Obligation (RCO) mechanism provides a pivotal and revamped policy tool to drive the enhanced renewable energy (RE) integration requirements in the country. These obligations mandate that designated consumers, including distribution licensees (Discoms), open access consumers, and captive power plants, consume a minimum percentage of electricity from renewable sources. Previously referred to as Renewable Purchase Obligation (RPO), these mandates were initially defined under Section 86(1)(e) of the Electricity Act, 2003, and the National Tariff Policy, 2016.


At the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Glasgow, the Hon'ble Prime Minister of India outlined the country's intensified climate action plan, presenting five key elements, known as Panchamrit. These elements include reducing the emissions intensity of GDP by 45% by 2030 compared to 2005 levels, reducing projected carbon emissions by 1 billion tonnes by 2030, achieving a non-fossil energy capacity of 500 GW by 2030, reaching net-zero emissions by 2070, and ensuring that 50% of electricity capacity comes from non-fossil sources by 2030. These commitments have been incorporated into India's enhanced Nationally Determined Contributions (NDCs), which were approved by the Union Cabinet and submitted to the UNFCCC in August 2022.

In response to the updated NDCs, several significant developments occurred. The Energy Conservation Act, 2001, was amended in December 2022 to bring RCO under its purview, and the RCO targets were significantly revised with a defined trajectory until 2030. In October 2023, the Ministry of Power utilized its newly acquired statutory powers under the Energy Conservation Act to announce year-wise RCO trajectory until 2030, commencing from 2024-25.

This marks the first-ever notification of RCO / RPO under this Act, encompassing distinct sub-targets for wind, hydro, and distributed renewable energy (DRE) within the overarching objectives. The notification outlines the mandated minimum share of non-fossil electrical energy consumption for designated consumers. Additionally, it builds upon the July 2022 MoP notification, introducing varied consumption shares for different non-fossil sources, including a new category for distributed renewable energy (DRE).

Subsequently, the Ministry of Power has issued an amendment notification on 27th September 2025 in supersession of its Notification dated 20th October 2023 on RCO. This amendment introduced several significant changes including some exemptions for various designated consumer sectors and enabling mechanisms like Virtual Power Purchase Agreement and Buyout Mechanism, for facilitating the compliance to RCO obligations.

According to the notification, the Bureau of Energy Efficiency (BEE) is responsible for monitoring compliance with RCO mechanism among designated consumers (DCs) and reporting to the Central Government.



BEE is also mandated to develop and publish detailed guidelines for the implementation of the RCO mechanism. Accordingly, BEE has developed these detailed operational guidelines for RCO compliance. These operational guidelines cover the provisions of the latest RCO notification dated 27 September 2025, and elaborate on the various operational aspects including Modes of RCO Compliance, modalities for Monitoring, Verification and Reporting, Penalties and Adjudication etc.

While developing the RCO operational guidelines, BEE organized various consultation workshops across different regions of the country, engaging with all SERCs/JERCs, DISCOMs, and designated consumers with captive power plants (CPPs). The valuable feedback and suggestions received during these workshops were instrumental in refining these detailed guidelines for RCO compliance and addressing sector-specific challenges.

Additionally, BEE is in the process of developing a dedicated RCO compliance portal, to facilitate RCO compliance in accordance with the notified mandates and these operational guidelines.

### 3. Definitions

1. **Act** means the Energy Conservation Act, 2001 (No. 52 of 2001).
2. **Accredited Carbon Verification Agency (ACV Agency)** shall have the same meaning as assigned to it in the Carbon Credit Trading Scheme, 2023, as amended from time to time.
3. **Accredited Energy Auditor (AEA)** shall have the same meaning as assigned to it under the Act.
4. **Alternate fuels and raw materials (AFR)** means the alternate fuels including Hazardous waste Refuse derived fuel from municipal solid waste, used tyres, Biomass; Industrial plastic; and alternate raw materials including Fly ash; and Slag; which are used as alternate fuels and raw material for co-processing in the Indian Cement Industry.
5. **Area of supply** for a distribution licensee shall have the same meaning as assigned to it under Sub-section (3) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
6. **Assessment year** means the financial year immediately following the target year.
7. **Auxiliary Power Consumption (APC)** shall have the same meaning as assigned to it under Sub-section (7) of Section 3 of Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2024 as amended from time to time.
8. **Biomass** means the biodegradable portion of products, waste, and residues from biological sources such as agriculture (including vegetable and animal waste), forestry and related industries, as well as biodegradable fraction of industrial and municipal waste, it includes biogas, bioliquids and biofuels.
9. **Black liquor dry solids** shall have the same meaning as assigned by the Ministry of New and Renewable Energy (MNRE) from time to time.
10. **Captive power plant (CPP) / Captive Generation Plant (CGP)** shall mean any power plant complying with the requirements prescribed under Rule 3 of Electricity Rules, 2005 as amended from time to time.
11. **Central Commission** shall have the same meaning as assigned to it under Sub-section (9) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
12. **Co-generation (co-gen)** shall have the same meaning as assigned to it under Sub-section (12) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
13. **Consumer** shall have the same meaning as assigned to it under Sub-section (15) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
14. **Designated consumer (DC)** shall have the same meaning as assigned to it under clause (g) of section 2 of the Act.
15. **Distribution licensee** shall have the same meaning as assigned to it under Sub-section (17) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
16. **Distributed renewable energy (DRE)** shall have the same meaning as prescribed under section 6.1 of these guidelines.
17. **Electricity Distribution Companies** means those entities having issued distribution license by State / Joint Electricity Regulatory Commissions (SERCs/ JERCs) under the Electricity Act, 2003 (No. 36 of 2003) as amended from time to time.

18. **Eligible non-fossil (green / renewable) energy** shall have the same meaning as prescribed under section 6 of these guidelines.
19. **Empaneled AEA Agency** shall mean the AEA Firm or Agency empaneled by BEE for conducting verification / check-verification activities for PAT scheme.
20. **Green energy** shall have the same meaning as prescribed under the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules, 2022 as amended from time to time.
21. **Green hydrogen** shall have the meaning assigned to it by the MNRE from time to time.
22. **Non-fossil sources** means such sources of energy including but not limited to nuclear energy and renewable energy (RE) sources such as biomass; biofuel, urban or municipal waste; geothermal; hydro; wind; solar PV; hybrid RE projects or any other source as may be recognized or approved by the central government.
23. **Obligated DC** means such DCs on whom RCO is mandated
24. **Open access** shall have the same meaning as assigned to it under sub-section (47) of Section 2 of the Electricity Act 2003 (No. 36 of 2003) as amended from time to time.
25. **Quarter** means each of the four quarters of a financial year
26. **RCO Notification** shall mean the gazette notification S.O. 4421(E) dated 27 September 2025 issued by Ministry of Power, as amended from time to time
27. **State Designated Agency (SDA)** shall have the same meaning as assigned to it under clause (d) of Section 15 of the Act.
28. **State Commission** shall have the same meaning as assigned to it under clause (t) of Section 2 of the Act.
29. **Target year** means the financial year for which compliance to RCO is being assessed.
30. **Verification** means a thorough and independent evaluation by the Empaneled AEA Firm, of the data submitted by the DC for compliance with the RCO in the target year.
31. **Waste to energy** shall have the same meaning as assigned to it by the central government from time to time
32. **Waste heat** means heat that is rejected or escaping from industrial or other processes after having served its primary purpose.
33. **Waste heat recovery (WHR) based power generation** means any facility that uses waste heat recovered from industrial or other processes and reused for power generation.
34. **Year** means the financial year starting from 1<sup>st</sup> April till 31<sup>st</sup> March of subsequent year.

Words and expressions used herein and not defined in these guidelines, but defined in the Act or the Electricity Act, 2003 (No. 36 of 2003), or RCO Rules shall have the meanings respectively assigned to them in those Acts.

## 4. Renewable Consumption Obligations: Minimum share of consumption of eligible non-fossil sources

- 1) **Renewable Consumption Obligations (RCO):** The specified minimum share of electrical energy consumption from eligible non-fossil sources by obligated DCs as a percentage of their total electricity consumption (including fossil and non-fossil sources) shall be as per the RCO notification by Ministry of Power. These shall be known as Renewable Consumption Obligations (RCOs).
- 2) This notification took effect on April 1, 2024, and compliance monitoring by BEE will commence from FY 2024-25.
- 3) Thus,

Renewable Consumption Obligations (RCO)

$$= \frac{\text{Energy consumption from Eligible Non – Fossil Sources}}{\left\{ \begin{array}{l} \text{Energy consumption from all non – excluded Fossil Sources} \\ + \\ \text{Energy consumption from all Eligible Non – Fossil Sources} \end{array} \right\}}$$

*Note: Excluded Fossil Sources are described in this chapter, under point (6) IV – Exclusions, and Eligible Non-Fossil Sources are described under Chapter 6.*

- 4) For all designated consumers under the Act, no additional Renewable Purchase Obligation shall apply under the Electricity Act, 2003 (36 of 2003), and the State-level Renewable Purchase Obligation targets shall be subsumed within the RCO targets specified in the said notification.
- 5) **Applicability, Exclusions, and Trajectory of RCO:**
  - I. **Applicability:** RCO is applicable on all DCs falling under the following categories:
    - a. All Electricity Distribution Companies (Distribution Licensees)
    - b. All designated consumers who consume energy from Captive Power Plants or through Open Access
    - c. List of DCs and their threshold annual energy consumption have been notified by Govt. of India, through various notifications issued under the provisions of EC Act, 2001. All entities falling within these sectors and having energy consumption above the specified threshold, are classified as designated consumers, and RCO is hence applicable to them. The following table indicates notified sectors as DC and their threshold annual energy consumption:

S.No.	Notified Sector	Threshold Annual Energy Consumption in MTOE
1.	Aluminum	7500
2.	Cement:	
	(a)Integrated Cement Unit	30,000
	(b)Cement grinding Unit	10,000
3.	Commercial Building or establishments:	
	(a) Hotels	500

S.No.	Notified Sector	Threshold Annual Energy Consumption in MTOE
	(b) Airports	500
4.	Chlor Alkali	12,000
5.	Electricity Distribution Companies (Distribution Licensees)	All distribution licensees are designated consumers as per EC Act
6.	Fertilizer	30,000
7.	Iron and Steel	20,000
8.	Pulp and Paper	75,000
9.	Petroleum Refinery	90,000
10.	Petrochemical units having gas crackers or naphtha crackers or both	1,00,000
11.	Railway	
	(a) All Zonal Railways (Traction)	70,000
	(b) Workshops	750
	(c) 8 Production factories of Railways namely ICF, RCF, CLW, BLW, PLW, RW, MCF and RWP	
12.	Textiles	3,000
13.	Petrochemical Manufacturing units:	
	(1) Fiber Intermediates	50,000
	(2) Polymers	10,000
	(3) Detergent intermediates	9,000
	(4) Performance Plastics	3,000
	(5) Other petrochemical products	6,000
	(6) Synthetic rubbers	15,000
	(7) Aromatics	20,000
14.	Sugar	10,000
15.	Chemical:	3,000
	(1) Alkali Chemical (Soda Ash, Potassium Hydroxide);	3,000
	(2) Inorganic Chemicals;	3,000
	(3) Organic Chemicals;	3,000
	(4) Pesticides (Technical);	3,000
	(5) Dyes and Pigments; and	3,000
	(6) Pharmaceuticals (Active Pharmaceutical Ingredient)	3,000
16.	Ceramic	5,000
17.	Glass	10,000

S.No.	Notified Sector	Threshold Annual Energy Consumption in MTOE
18.	Zinc	20,000
19.	Copper	10,000
20.	Port Trust	500
21.	Dairy	2500
22.	Automobile Assembly Unit	3000
23.	Tyre manufacturer	7000
24.	Forging	1500
25.	Foundry	5000
26.	Refractories	3000

**Note1:** Even though Thermal Power Plants (TPPs) are defined as DCs, the RCO targets are not applicable on TPPs as the TPPs function as Independent Power Producers and the power generated by them is for sale and not for consumption.

**Note2:** For the sake of ample clarity, it is reiterated here that All entities falling within the criteria of DC and corresponding thresholds as defined in the schedule of the EC Act, are obligated designated consumers under RCO. This is irrespective of whether the respective DCs are registered under PAT or CCTS schemes or not, and also irrespective of whether or not the respective DCs have been assigned a registration number under any of these schemes.

## II. Electricity distribution companies

- All electricity distribution companies (distribution licensees) are designated consumers under the Energy Conservation Act. RCO is hence applicable to all electricity distribution companies.
- Following is the RCO trajectory applicable to the electricity distribution companies.

Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
<b>Wind RCO</b>	0.67%	1.45%	1.97%	2.45%	2.95%	3.48%
<b>Hydro RCO</b>	0.38%	1.22%	1.34%	1.42%	1.42%	1.33%
<b>Distributed RCO *</b>	1.50%	2.10%	2.70%	3.30%	3.90%	4.50%
<b>Other RCO</b>	27.36%	28.24%	29.94%	31.64%	33.09%	34.02%
<b>Total RCO</b>	29.91%	33.01%	35.95%	38.81%	41.36%	43.33%

\* **Note1:** For hilly and North-Eastern States/Union Territories, namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, Jammu & Kashmir, Ladakh, Himachal Pradesh and Uttarakhand, the distributed RCO component shall be half of that given in the Table and the remaining component for these States shall be included in the other RCO component.

\* **Note2:** For distribution licensees serving exclusively urban consumers, the distributed RCO component shall be 75% of the specified level. The remaining

component for these distribution licensees shall be included in the other RCO component.

- c. The distribution licensees are obligated to the extent of electricity supplied to their consumers under their ‘area of supply’, including distribution losses.

Explanation: Since Supply of electricity to its consumers is the primary business activity for a distribution licensee, the electricity consumed by all consumers within its area of supply including the distribution losses is considered the energy deemed to be consumed by the distribution licensee.

- d. Obligations under Wind, Hydro, and Other renewable energy components are fungible (shortfalls in one can be met by surpluses from others)
- e. Also, Surplus from Distributed renewable energy can be used to meet shortfalls in Wind, Hydro, or Other renewable energy consumption.
- f. However, shortfall in Distributed renewable energy can be met only by consuming Distributed renewable energy or by purchase or self-retention of RECs, or payment of buyout price (refer section 7.3)

**III. Captive consumers and open access consumers:**

- a. RCO is applicable to all designated consumers who are captive consumers, and / or open access consumers.
- b. The following is the RCO trajectory applicable to captive consumers and open access consumers:

Year	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
<b>RCO</b>	29.91%	33.01%	35.95%	38.81%	41.36%	43.33%

- c. DCs consuming electricity from CPPs or open access are obligated to the extent of their consumption of electricity from the respective sources.
- d. DCs with CPPs and open access are required to meet the specified total RCO, regardless of the eligible non-fossil energy source.
- e. In the case of CPPs, this includes all self-consumption of power except the Auxiliary Power Consumption (APC) in the CPP(s).
- f. Only the auxiliary power consumption that is attributable to the generation of power in CPPs may be considered as Auxiliary Power Consumption (APC).
- g. In the case of open access consumer, consumption will be considered based on the power drawn at the point of consumption of DC.

**IV. Exclusions:**

- a. For all the designated consumers, RCO shall exclude electricity consumed from Nuclear power sources.
- b. The Electricity consumed by a DC from a CPP based on WHR from sources other than the eligible energy sources [except for energy produced from Waste Heat Recovery Steam Generator (WHRSG) in Combined Cycle Gas Based Generating Station] is exempted from RCO.
- c. Further, for captive users, the obligations shall also exclude electricity generated and self consumed through waste energy recovery, including from byproduct gases, or

other forms of residual energy sources associated with industrial processes. (For example, power generated and self-consumed from Blast Furnace Gas and Coke Oven Gas in Iron & Steel industry, Flare Gas in Refineries etc.)

- d. Further, for captive users, the obligations shall also exclude 50% (fifty percent) of the electricity generated and self-consumed from fossil fuel based cogeneration. All electricity generated from backpressure turbines, and extraction condensing turbines, and the electricity generated from gas turbines where the downstream WHRSG also generates steam for thermal processes, is attributable to co-generation. Electricity generated from purely condensing turbines will not be attributable to co-generation.

**Note 1:** The 100% exclusion of WHR / WER based power and 50% exclusion of co-gen power is applicable for power that is generated and self-consumed. As an exception, in case of multiple DCs drawing power from the same co-gen power plant, the 100% WHR / WER exemption or 50% Co-gen exemption is admissible as long as the con-gen power plant and the multiple DCs are geographically co-located, and only if the transactions along with respective WHR/WER/Co-gen status are traceable through direct metering, and/or through bilateral agreements and invoices.

**Note 2:** Energy generated from microturbines (backpressure turbines) connected across pressure reduction valve or PRDS in a steam system, can be considered as waste energy recovery and will thus be 100% exempt from RCO obligations.

**Note 3:** In case of a designated consumer having Captive Generation only from WHR or WER based CPP, and having no open access consumption, such a DC may be exempt from RCO obligations, however such a DC will still need to get the RCO compliance verification audit done from a BEE empaneled AEA. Such RCO compliance audit report should confirm the status of captive generation as WHR, WER, or otherwise.

**Note 4:** In case a designated consumer does NOT have any Captive Generation of power and does NOT consume any power through open access, such a DC may be exempt from RCO obligations. However, such a DC will still need to submit the energy account (Form A) as per procedures outlined in section 8 - Monitoring, Verification and Reporting. There is NO need for such a DC to get the RCO compliance audit done from a BEE empaneled AEA.

- e. The Electricity consumed by a DC from a captive power plant (CPP) shall be exclusive of the auxiliary power consumption in the CPP.

The deduction of auxiliary power shall be proportionate to the portion of the total generation on which the RCO obligations are applicable. That is to say, that the auxiliary power consumed for the power generation / consumption that is excluded from RCO obligations will also be correspondingly excluded.

**Illustration 1 for deduction of APC:**

- (1) Total Power Generation from CPPs = 360 MU
  - Power Generation from CPP (Non Co-gen) = 100 MU
  - Power Generation from CPP (Co-gen) = 150 MU
  - Power Generation from CPP (WHR) = 110 MU
- (2) Total Power Generation on which RCO is applicable =  $100 + 150 / 2 = 175$  MU
- (3) Total APC from CPPs = 45.5 MU
  - APC of CPP (Non Co-gen) = 12% (i.e. 12 MU)
  - APC of CPP (Co-gen) = 15% (i.e. 22.5 MU)
  - APC of CPP (WHR) = 10% (i.e. 11 MU)
- (4) Total APC on which RCO is applicable =  $12 + 22.5 / 2 = 23.25$  MU
- (5) Net Power Generation after deducting APC on which RCO is applicable =  $175 - 23.25 = 151.75$  MU

**Illustration 2 for deduction of APC:**

- (1) Total Power Generation from CPPs = 360 MU
  - Power Generation from CPP (Non Co-gen) = 100 MU (80% from Co-firing of Renewable Fuels)
  - Power Generation from CPP (Co-gen) = 150 MU (60% from Co-firing of Renewable Fuels)
  - Power Generation from CPP (WHR) = 110 MU (50% from Co-firing of Renewable Fuels)
- (2) Total Power Generation on which RCO is applicable =  $100 + 150*0.6 + 150*0.4 / 2 + 110*0.5 = 100 + 90 + 30 + 55 = 275$  MU
- (3) Total APC from CPPs = 45.5 MU
  - APC of CPP (Non Co-gen) = 12% (i.e. 12 MU)
  - APC of CPP (Co-gen) = 15% (i.e. 22.5 MU)
  - APC of CPP (WHR) = 10% (i.e. 11 MU)
- (4) Total APC on which RCO is applicable =  $12 + 22.5*0.6 + 22.5*0.4 / 2 + 11*0.5 = 12 + 13.5 + 4.5 + 5.5 = 35.5$  MU
- (5) Net Power Generation after deducting APC on which RCO is applicable =  $275 - 35.5 = 239.5$  MU

- f. 50% of Fossil based electricity consumed in an Aluminium Smelter will be exempt from RCO.
- g. Consider the case where a DC is consuming power only as a Discom consumer and does NOT have captive generation and/or open access consumption of power. In such

a case, the electricity consumed captively by the DC through DG Sets will be exempt from RCO if the same is below 5.0% of the total annual electricity consumption of the DC or less than 2 MU per annum (whichever is lower).

For example,

Annual Energy Consumption of Designated Consumer (Million kWh)	5.0% of Annual Energy Consumption of DC (Million kWh)	Threshold for applicability of RCO on DG Set Electricity Generation (Million kWh)	Actual Annual Energy Consumption of DC through DG Set (Million kWh)	Is RCO applicable on DG Set Electricity Consumption (Yes/No)
200	10	2	4	Yes
50	2.5	2	0.8	No
10	0.5	0.5	1	Yes
10	0.5	0.5	0.4	No

In case the DG set energy consumption for the DC falls short of the threshold, and is exempt from RCO, the DC still has to submit the energy account (Form A) as per procedures outlined in section 8 - Monitoring, Verification and Reporting. Form A thus submitted should include the DG Set consumption irrespective of its exemption from RCO as per above arrangement. There is NO need for such a DC to get the measurement and verification audit done from a BEE empaneled AEA.

**Power Consumption for Non-DC Operations are NOT EXCLUDED!  
From RCO Obligations**

**What are Non-DC Operations?**

Any Operations by a Designated Consumer, that are not directly related to the core product or service of the designated consumer are termed as non-DC operations for the purpose of these operational guidelines.

Examples:

- Upstream Operations other than core operations - like Mining
- Downstream Operations other than core operations – like Marketing Division, Operations related to Supply / Distribution of core products/services
- Other ancillary operations – like Staff Colony, Canteen

The rationale behind RCO obligations is to promote RE integration, and as such the RCO obligations are applicable on the total electrical energy consumption, irrespective of the end use for which the consumption is occurring.

Non-DC operations are **NOT EXCLUDED!** from RCO obligations. The **power consumed for non-DC operations** is subject to RCO obligations and **shall be included in the denominator while calculating the RCO compliance of the DC.**

## 5. RCO framework: Institutional Mechanism, Roles and Responsibilities

The key stakeholder groups for RCO compliance monitoring mechanism and flow of data and information between the key stakeholders is highlighted in the schematic diagram below.

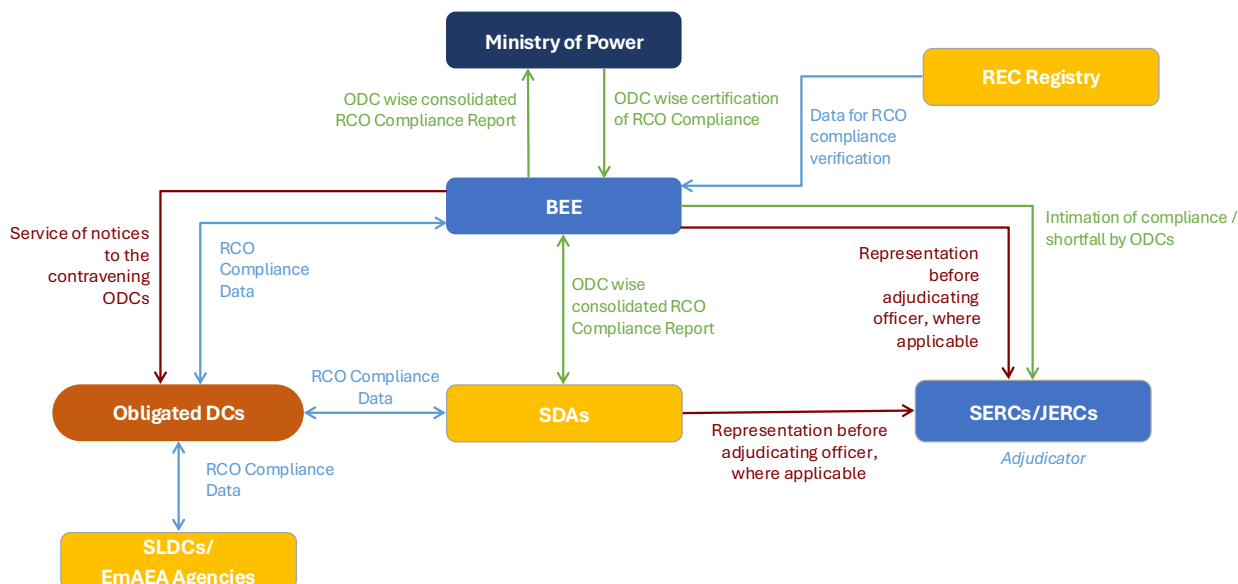


Figure 1: Institutional Mechanism

The roles and responsibilities of the stakeholder groups are as follows:

1. Roles and Responsibilities of Ministry of Power (MoP)
  - I. Notifying and amending the RCOs including year-wise RCO trajectory as and when required.
2. Roles and Responsibilities of Bureau for Compliance Monitoring:
  - I. Recommending RCOs (minimum share of consumption of non-fossil sources) targets / trajectory for different types of non-fossil sources for different DCs to the MoP.
  - II. Development and maintenance of the guidelines for compliance with RCOs
  - III. Taking up all activities related to development of data submission formats, for effective functioning of mechanism for compliance with RCOs, as per the gazette notifications
  - IV. Development of a centralized portal for data collection and monitoring of RCO compliance
  - V. Maintain the list of Empaneled AEA agencies who are eligible to verify the RCO compliance data
  - VI. Report on the compliance status of RCOs by different DCs to the Central Government, with a copy to the individual state electricity regulatory commissions.
  - VII. Initiation of necessary actions for non-compliant DCs, as per the provisions of Energy Conservation (Compliance Enforcement) Rules, 2025.
3. Roles and Responsibilities of State Designated Agencies:

- I. Submit to the Bureau, the RCOs compliance reports in the manner and frequency as prescribed in these guidelines
  - II. Communicate any discrepancies found during verification and ensuring reconciliation of the same by the obligated DC
  - III. Approach the State Commission on non-compliance of RCO targets by obligated DCs, as per the provisions of Energy Conservation (Compliance Enforcement) Rules, 2025
4. Roles and Responsibilities of the REC Registry (Grid India)
- I. Providing all support to the Bureau required for the verification of REC purchase / issuance / self-retention data including sharing of REC data on the RCO portal in digital form.
5. Roles and Responsibilities of Empaneled AEA Agency (EmAEA)
- The EmAEA will be appointed by the respective obligated DC for verification of the data and information pertaining to RCO compliance of the obligated DC. The roles and responsibilities of EmAEA for verification of RCO Compliance are as follows:
- I. Conducting the annual verification of RCO compliance for the respective obligated DC (other than distribution licensee), in the manner and within timelines as prescribed by the bureau from time to time
  - II. Adhering, at a minimum, to the model scope of work (appended as Annexure – 3 to these operational guidelines) while conducting annual verification of RCO compliance
  - III. Responding to queries raised and working on resolution; in case any discrepancy is discovered by the SDA/BEE in the compliance data submitted by the Obligated DC.
6. Roles and Responsibilities of State Load Despatch Centers (SLDCs)
- I. Conducting the annual verification of RCO compliance for the respective distribution licensee, in the manner and within timelines as prescribed by bureau from time to time.
  - II. Responding to queries raised and working on resolution; in case any discrepancy is discovered by the SDA/BEE in the compliance data submitted by the Obligated DC.
7. Roles and Responsibilities of DCs obligated under RCOs (Obligated DCs)
- I. Complying with all guidelines as prescribed from time to time regarding RCOs.
  - II. Fulfilling RCOs as per the modes of compliance given in section 7 of these guidelines.
  - III. Carry out RCO verification audit through BEE empaneled AEA agency and facilitating the verification of RCOs compliance information
  - IV. In case of corporate level compliance, the holding company is required to unequivocally demonstrate common control over concerned DCs under Companies Act, 2013 or the relevant Cooperative Societies Act, as amended from time to time.

## 6. Eligible energy sources for RCO Compliance

1. Non-fossil (renewable) electrical energy sources or green energy sources as specified by the Central Government from time to time are considered eligible energy sources for the sake of compliance towards Renewable Consumption targets notified by the central government.

Examples of eligible energy sources:

- Solar Photovoltaic (Solar PV) and solar thermal power
- Wind Energy
- Hydro - including Large Hydro Projects (LHPs), and Small Hydro Projects (SHPs)
- Pumped Storage Projects (PSPs) only to the extent that the PSP is charged with renewable power (i.e. only the RE power that is used to charge a PSP after deducting corresponding losses can be drawn and consumed as RE from the PSP).
- Electrical energy generated based on:
  - Biomass
  - Biogas
  - Black Liquor Dry Solids
  - Municipal Solid Waste (MSW)
  - Charcoal produced from MSW
  - co-firing of AFR recognized as renewable sources by MNRE, MoEFCC or Central Government including Refuse Derived Fuel from Municipal Solid Waste, and Biomass
  - Waste to Energy based power
  - Non-fossil fuel (including Bagasse) based co-gen projects
- Geothermal power
- Tidal power
- Consumption of green hydrogen or green ammonia as energy
- Any other source of renewable or green electrical energy as may be recognized or approved by Central Government / MNRE from time to time

2. While all power generated by Standalone projects firing and co-firing eligible renewable fuels will qualify as renewable power eligible for RCO compliance fulfilment, power generated by Co-firing of eligible renewable fuels will qualify to the extent of renewable fuels fired. The methodology for estimation of electricity generated from combustion of renewable fuels is provided as Annexure 1.
3. The energy generated by RE projects registered under REC Mechanism notified by Central Commission or registered under any other mechanism for Energy Attribute Certificates (EACs) is NOT eligible for being accounted towards meeting RCO compliance.
4. Energy generated from nuclear sources, not being a renewable source of energy, is not eligible for being accounted towards RCO compliance. However, nuclear energy is exempt from RCO obligations (Refer Sub-section 4.6.IV.a)

5. The energy stored in any energy storage system (ESS) including battery energy storage systems (BESS) and pumped hydro storage plants in accordance with the applicable regulations, is eligible only to the extent that the stored energy is generated from an eligible energy source.

## **6.1 Distributed Renewable Energy**

Distributed Renewable Energy (DRE) means non-fossil (renewable) electrical energy generated from all eligible non-fossil energy sources (defined in section 6, point 1) that are not more than 10 MW in installed capacity.

DRE will also include grid connected solar and other RE installations under all configurations (net metering, gross metering, virtual net metering, group net metering, behind the meter (BTM) and any other configuration) as notified by the Central Government from time to time.

In case the DC fails to provide generation data against DRE installations, the reported capacity can be transformed into DRE generation in terms of energy by a multiplier of 4 units per kilowatt per day (kWh/kW/day). The number of days in the year that the DRE installation has been in operation requires to be declared and certified by the obligated DC and verified by the empaneled AEA agency or SLDC as applicable.

# 7. Modes of RCO Compliance

## 7.1 Modes of compliance for DCs with CPPs and Open Access

### 1. Own generation (grid connected or otherwise) under captive mode

DCs can fulfil RCO by consumption of electricity generated from its Captive Generating Plant (CGP) based on eligible energy sources indicated at section 6 of these guidelines.

### 2. Requisition from DISCOM

The obligated DCs can fulfil RCO by requisition from distribution licensee as per the Electricity (Promoting Renewable Energy Through Green Energy Open Access) Rules 2022, as amended from time to time.

The DC needs to submit a no-objection certificate provided by distribution licensee mentioning that the distribution licensee agrees to provide the said quantum of electrical energy from eligible non-fossil source to the respective obligated DC and that the distribution licensee shall have no claim over the eligible non-fossil electrical energy thus supplied.

### 3. Consumption of Green Hydrogen or Green Ammonia

- I. Consumption of green hydrogen or green ammonia only as energy and not as feedstock will be considered towards fulfillment of RCO compliance.
- II. Consumption of green hydrogen or green ammonia will be calculated as per the methodology specified in Annexure 2.

## 7.2 Modes of compliance for DISCOMs

### 1. Sourcing green energy from RE Projects

DISCOMs can fulfil their RCO by generating or procuring electrical energy directly from renewable energy projects based on the eligible energy sources.

### 2. Other Modes of Compliance

- I. Consumption of power through captive generation from eligible non-fossil sources from only a grid connected source by the consumers of a distribution licensee other than obligated DCs, within the 'area of supply' of the distribution licensee.
- II. Power purchased by the distribution licensee from an obligated DC who is a consumer of the distribution licensee within its 'area of supply', and having captive generation from grid connected DRE sources can be accounted towards the RCO compliance of the distribution licensee. Whereas, the remaining power generated and consumed by the obligated DC, will be accounted towards its own compliance.

- III. Power generated from off-grid RE/ DRE sources owned by the distribution licensee, can be considered towards RCO compliance of the distribution licensee.

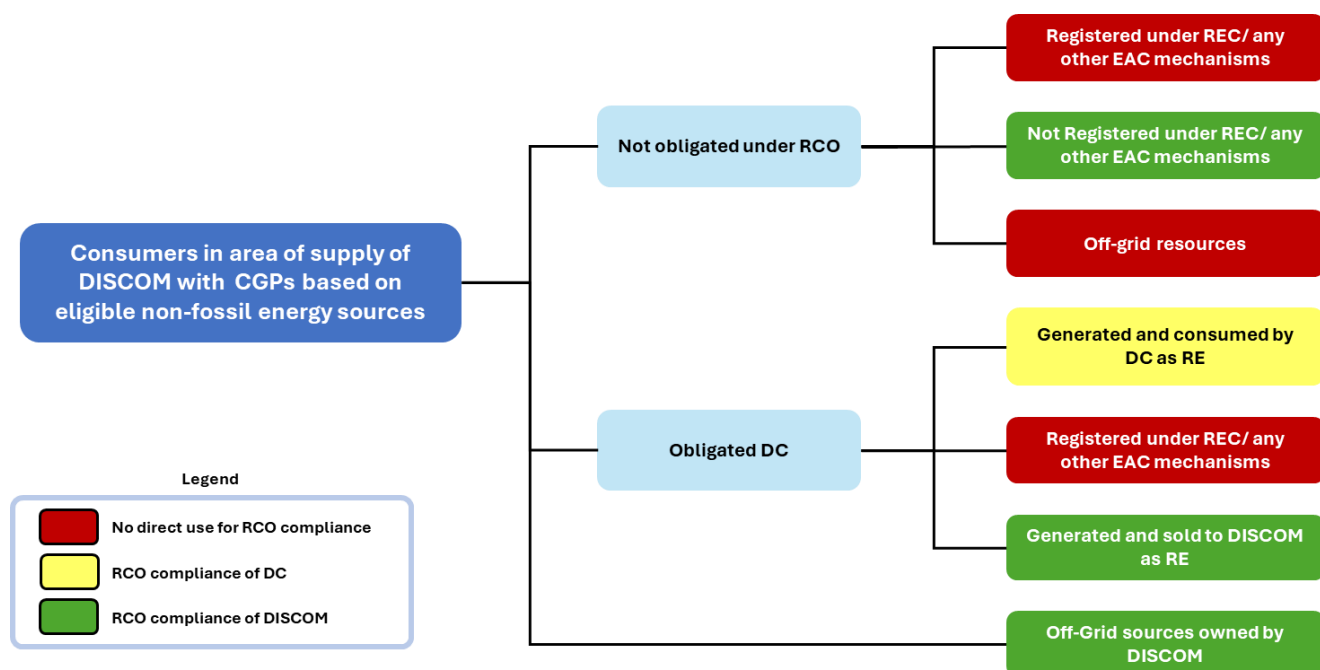


Figure 2: Other modes of compliance for distribution licensees

- IV. For a discom consumer that is not obligated under RCO, the entire energy consumption that is generated by the DRE source and recorded in the generation meter will be considered towards fulfilment of RCO compliance of the DISCOM. This will be the case, irrespective of the configuration, both for Net Metering and Gross Metering configurations.
- V. For a discom consumer that is also a DC obligated under RCO, the energy that is generated and sold to the DISCOM shall be considered towards fulfilment of RCO compliance of the DISCOM. The following shall apply:

In case of gross metering configuration, the entire energy that is generated and exported to the grid as recorded in the energy export meter, will be deemed to be sold to the Discom and hence considered towards fulfilment of RCO compliance of the DISCOM.

In case of net metering configuration, the net energy that is generated and exported to the grid as recorded in the bidirectional meter, will be considered towards fulfilment of RCO compliance of the DISCOM.

### 7.3 Modes of compliance for all DCs

#### 1. RE consumption through Open Access

DCs can fulfil RCO by sourcing Renewable Energy via Open Access route as per provisions of Green Energy Open Access Rules, 2022, as amended from time to time.

#### 2. Consumption from ESS

The obligated DCs can consume the energy generated or procured from eligible non-fossil energy sources and stored in any ESS including BESS and PSPs in accordance with applicable regulations.

In order to qualify as a mode of compliance, the stored energy needs to be consumed by the DC and mere storage of energy generated or procured from an eligible energy source using ESS does not qualify towards fulfilment of RCOs.

Only the energy consumed after deducting losses in the ESS will be considered towards fulfilment of RCOs.

### 3. Purchase or Self-retention of RECs

The obligated DCs can purchase RECs through power exchange(s) or through electricity trader(s) or self-retain the previously issued RECs as per the provisions of the CERC (Terms and Conditions for Renewable Energy Certificates for Renewable Energy Generation) Regulations, 2022, as amended from time to time.

**Note 1:** Procedures for redemption of RECs by purchase and self-retention are published by the REC registry (Grid India) in the ‘Procedure for Implementation of REC mechanism’ Rev 3. March 2024.

**Note 2:** As a special case for FY 24-25 only, the RECs purchased during the Target Year (i.e. FY 24-25), that are in excess of the RCO obligations of FY24-25, shall be allowed to be adjusted for the compliance of the subsequent Target Year (i.e. FY 25-26).

### 4. Virtual Power Purchase Agreement (VPPA)

The obligated DCs can procure RECs by entering into Virtual Power Purchase Agreements as notified from time to time by CERC.

### 5. RCO Buyout Mechanism

In case of shortfall of availability of RECs in the market, the DCs can opt for the RCO Buyout as per the RCO Notification by MoP.

- I. Buyouts will be considered as a valid means of RCO Compliance, including compliance of DRE targets.
- II. The buyout price will be effective from FY 24-25 and will remain in force up to FY 29-30, unless they are reviewed by the Commission.
- III. The buyout price for FY 24-25, and for each of the financial years till FY 29-30 in INR/MWh, will be as specified by the CERC vide its order No. 12/ SM/2025 dated 18 February 2026, or as amended by CERC from time to time.
- IV. The buyout price for each target year, as specified by the CERC vide its order No. 12/ SM/2025 dated 18 February 2026 are tabulated below for ready reference:

Target Year	Weighted Average of REC Price including PXs and Traders (₹/MWh)
2024-25	347

2025-26	347
2026-27	364
2027-28	382
2028-29	401
2029-30	421

## 6. Corporate level compliance

I. Corporate level compliance shall be allowed for corporates or cooperative societies having multiple obligated DC entities under their common control as defined in the Companies Act, 2013, or under the relevant Cooperative Societies Act.

II. The multiple obligated DC entities may be either co-located or located in different geographies in India and may belong to any of the energy intensive sectors notified as DCs under clause (e) of section 14 of the Act.

III. Corporate level compliance shall be considered at the level of the holding company having common control of the obligated DCs.

IV. Compliance to RCOs shall be considered in aggregate across the multiple obligated DC entities under common control of the holding company. Thus, shortfall or surplus in one of the obligated DC entities can be offset against the corresponding surplus or shortfall in another obligated DC entity under common control of the holding company.

V. For the purposes of providing ample clarity, it is also reiterated that RCO compliance will only be aggregated across all the obligated DCs under the common control of the holding company. In case the holding company also has non-DC entities (i.e. entities that are not falling under the DC sectors and corresponding thresholds as defined in the schedule of the EC Act), then the energy including renewable energy consumed by such non-DC entities shall not be included while aggregating the RCO compliance under corporate compliance provisions.

The holding company can also redeem or self-retain the RECs self-generated by any of its non-DC subsidiary entities, against any of the subsidiary DCs, as per the procedures specified under section 8.5 (IV) (a).

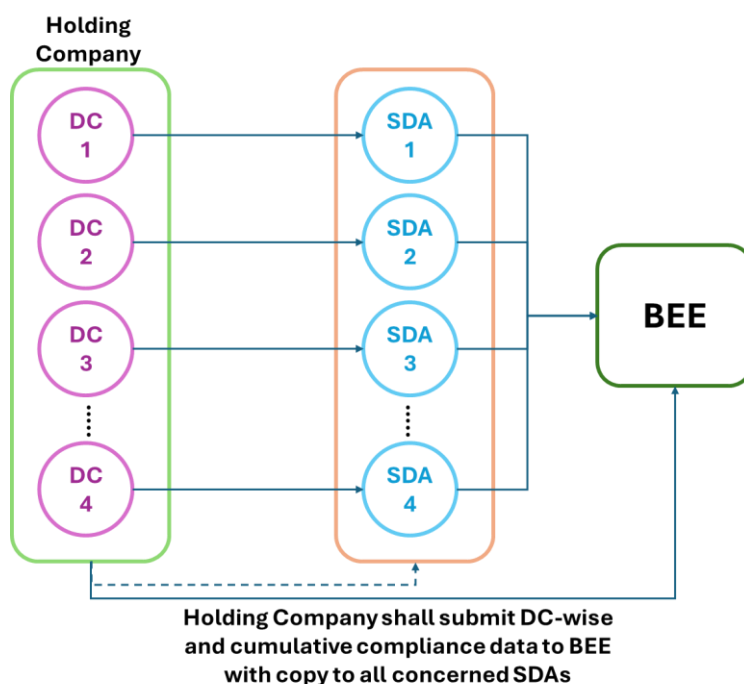



Figure 3: Corporate Level Compliance

- 
- VI. As a special case, Corporate Compliance along with all provisions as listed above will also be applicable in cases **where a licensed entity procures power on behalf of the State DISCOMs**. In such cases, the licensed entity authorized of such bulk procurement of power on behalf of the Discoms within the State, will act as the holding company. The holding company will follow the data submission requirements as mentioned in section 8.6 of these guidelines.

## **7. Combination of any of the above options**

## 8. Monitoring, Verification and Reporting

### 8.1 Annual submission of independently verified RCO data by DC to SDA

- I. All DCs who are captive or open access consumers of power, are required to get an independent annual verification for RCO compliance conducted through a BEE empaneled AEA Firm.
  - II. The DC is required to provide the information duly verified and certified by its own energy manager or plant head in the following manner:
    - a) The source-wise (Fossil based and Non-Fossil based) energy generation, purchase and sale data as per format provided in Annexure 4 (Form A).
    - b) Consumption (computed from the production, purchase, and/ or sale) of green hydrogen or green ammonia as energy as per Form A.
    - c) Total energy consumption and total non-fossil energy consumption will be determined using formulae as indicated in Form A.
  - III. All distribution licensees are required to get an annual verification of RCO compliance conducted by the respective State Load Despatch Center (SLDC).
  - IV. The obligated DC, in consultation with the empaneled AEA Firm / Agency needs to put in place a transparent mechanism for verification of the compliance data. The verification arrangements need to be in accordance with guidelines set out in these guidelines and the Model Scope of Work for Empaneled AEA Agency appended as Annexure – 3.
  - V. The Empaneled AEA Firm, is required to submit a report to obligated DC elaborating the verification activities conducted to arrive at the conclusions recorded, calculations done, supporting documents verified, any physical verification of metering arrangements, BTM installations, etc.
  - VI. Every obligated DC needs to submit to the SDA, with a copy to the Bureau, the annual compliance assessment form (Form A, as provided in Annexure 4) with compliance information for the complete target year duly certified and signed by the AEA Agency or respective SLDC as applicable. Form A will need to be submitted by the DC within 120 days of the completion of the Target Year (i.e. by 31 July of the assessment year). The following documents should be appended to the Certified Form A (annual):
    - a) RCO audit Report of the Empaneled AEA Agency along with all supporting documentation
    - b) Supporting documents to substantiate the fulfilment of RCOs as described in sub-section 8.1(III) of section 8
- Note 1: For target year FY25, Form A will need to be submitted by the DC by 31 October 2025.*
- VII. All obligated DCs including those with CPPs based on 100% Waste Heat Recovery (WHR) or 100% Waste Energy Recovery (WER), will need to submit the energy account in the prescribed formats (Form A).

VIII. The following supporting documents need to be made available by obligated DC to the empaneled AEA Agency, or SLDC as applicable. The empaneled AEA agency (or SLDC as applicable) will verify these, and any other supporting documentation and provide a confirmation of the same to the respective SDA and BEE.

Sr. No.	Submitted By	Supporting Document
I.	Distribution Licensees	<ul style="list-style-type: none"> <li>Data on sale of fossil-based energy to their consumers within their area of supply, who are obligated DCs.</li> </ul>
II.	Obligated DCs with fossil fuel based CGPs or co-gen plants	<ul style="list-style-type: none"> <li>Form 1, as notified by the MoP under G.S.R. 174(E) dated 02.03.2007 as amended from time to time,</li> <li>duly signed by AEA</li> <li>along with Calibration Certificate of generation meters</li> </ul>
III.	Obligated DCs with fossil fuel based CGPs or co-gen plants along with Co-firing RE Fuel	<ul style="list-style-type: none"> <li>Monthly Details of Co-firing of Fuels (Qty. and Wt. Avg. GCV of fuel, Qty. and Wt. Avg. Enthalpy of Steam etc.) as specified in Annexure - 1</li> <li>along with Calibration Certificate of generation meters</li> </ul>
IV.	Obligated DCs consuming non-fossil power through open access	<ul style="list-style-type: none"> <li>Monthly / Periodic electricity bills provided by distribution licensee, RE generator or any other relevant entities as the case may be</li> </ul>
V.	Obligated DCs with co-located off-grid or grid-connected RE based CGPs connected under net metering, gross metering or BTM configuration	<ul style="list-style-type: none"> <li>monthly generation and consumption data</li> <li>monthly electricity bills issued by the distribution licensee (in case of grid-connected configurations)</li> </ul>
VI.	Obligated DCs purchasing green hydrogen or green ammonia	<ul style="list-style-type: none"> <li>invoices indicating quantum of green hydrogen or green ammonia purchased,</li> <li>green hydrogen or green ammonia consumption data from the plant's ERP system or production documentation</li> </ul>
VII.	Obligated DCs with captive production of green hydrogen or green ammonia	<ul style="list-style-type: none"> <li>Quantum of RE (electricity) used for producing green hydrogen or green ammonia (electricity bills or captive</li> </ul>

Sr. No.	Submitted By	Supporting Document
		RE generation meter <sup>1</sup> data along with calibration certificates)
VIII.	Obligated DCs consuming eligible non-fossil energy through a BESS	<ul style="list-style-type: none"> <li>• Calibration certificates for energy meters measuring energy input and output from the BESS</li> </ul>

## 8.2 Provision of Information by REC Registry for verification of compliance

- I. For each State/UT, REC registry needs to provide access to BEE, for the obligated DC wise information on RECs. The data to be provided includes:
  - a. Buyer code of DC
  - b. No. of RECs purchased in the target year
  - c. Code(s) / identifier(s) of Certificate(s) of Purchase for REC purchases in (b) above
  - d. No. of RECs purchased in the assessment year compliance window
  - e. Code(s) / identifier(s) of Certificate(s) of Purchase for REC purchases in (d) above
  - f. No. of RECs redeemed through self-retention in the target year
  - g. No. of RECs redeemed through self-retention in the assessment year compliance window

## 8.3 Verification of compliance by SDA

- I. The SDA, will conduct a verification in the manner described below on an annual basis:
  - a) The State Designated Agencies will cross-verify the compliance information provided by the obligated DC as per Form A (annual) with the supporting documents and RCO compliance audit report (Refer sub-section 8.1).
  - b) The verification needs to be completed within twenty (20) days of receipt of the data from obligated DC to SDA, or within five (5) months of completion of the target year, whichever is earlier.
- II. In case of any mismatch or need for reconciliation identified during the verification, a resolution will be arrived at in the manner prescribed below:
  - a) In case SDA finds that there is any mismatch between the data submitted by obligated DC (Form A) and the supporting documents (and / or RCO compliance audit report) submitted by obligated DC, or incomplete documents or non-submission of

<sup>1</sup> A dedicated energy meter needs to be provided to record the electrical energy consumed for production of green hydrogen, and the meter specifications and calibration requirements shall be as specified by CEA, CERC or the Central Government as the case may be.

documents or data, SDA will take up the matter with the obligated DC and arrive at a suitable resolution and the Form A and/or the RCO audit report submitted by the DC will be updated.

- b) In case of any changes to the Form A or RCO Audit Report, the obligated DC will complete the same within twenty (20) days of receipt of the query from SDA, or within six (6) months of completion of the target year, whichever is earlier.
- III. The SDA will finalize the obligated DC wise RCO compliance Report (Form A) based on the verification results (including any reconciliation required) and a consolidated RCO compliance report for the state. SDA will submit the consolidated RCO compliance report and all DC wise RCO compliance reports to BEE, within seven (7) months of completion of the target year.

#### **8.4 Assessment Year Compliance Window (for RECs or Buyout)**

- I. The DCs can make up for any shortfall in compliance within a compliance window of nine (9) months of the conclusion of the target year (i.e. by 31<sup>st</sup> December of the assessment year) by purchase or self-retention of RECs or by payment of buyout price that is applicable for the target year.
- II. Within fifteen (15) days post completion of the compliance window for fulfilment of RCO compliance through RECs or payment of buyout price (i.e. by 15<sup>th</sup> January of the assessment year), the DCs are required to submit the RCO compliance declaration Form D (appended as Annexure 7), to the SDA and BEE. Form D should be duly certified by the obligated DC and appended with supporting documentation for purchase of REC and Buyout as applicable.

*Note: For target year FY25, the DCs are provided with an extended compliance window as a special case, till 31<sup>st</sup> March 2026, for submission of Form D after purchase or self-retention of RECs, or payment of buyout price to make up for any shortfall in RCO compliance. Form D can be submitted within fifteen (15) days post completion of this extended compliance window (i.e. by 15<sup>th</sup> April 2026) for the target year FY25.*

#### **8.5 Submission of data by Holding companies to BEE**

- I. The holding company with common control of the multiple obligated DCs is required to submit to the Bureau, with a copy to all SDAs of the states where respective obligated DCs are located, the corporate compliance assessment form (Form C provided in Annexure 6) with compliance information for the complete target year duly certified and signed by the respective empaneled AEA Agencies or SLDCs as applicable (Form A provided in Annexure 4).
- II. The duly completed and certified corporate compliance assessment form (Form C) should include the following:
  - a) Cumulative compliance information for all the obligated DCs under common control of the holding company.

- b) The Certified Form C should be appended with Form A & Form D as applicable, along with RCO Audit Report for each of the multiple obligated DCs under common control of the holding company.
- c) Certification by the Chief Executive Officer or equivalent of the Holding Company (including Cooperative Society or licensed entity for bulk power procurement on behalf of Discoms in State as applicable), and from Company Secretary or Chartered Accountant mentioning the legal name of the Holding Company or Cooperative Society and the legal names of each of the subsidiaries which are obligated DCs under the common control of such Holding Company or Cooperative Society, thereby certifying the common control of the Holding Company or Cooperative Society over such obligated DCs.

Such certification needs to be accompanied by any relevant documents submitted to the Registrar of Companies and the Certificate of Incorporation issued by the Registrar of Companies. Equivalent documents will need to be furnished in case of cooperative society registered under the relevant Cooperative Societies Act.

III. The following timelines need to be adhered to, for submission of Form C by a holding company (with multiple obligated DCs as subsidiaries):

- a. **After Target Year:** Form C with Part A to Part D duly filled, and with relevant supporting documents, to be submitted within 135 days of the conclusion of the target year (i.e. by 15<sup>th</sup> August of the assessment year). Inter-alia, the supporting documents should mandatorily include those needed to establish the relationship between holding company and subsidiaries (refer sub-section 8.6 (II) above).
- b. **After Assessment Year Compliance Window:** Form C duly completed, and with relevant supporting documents, to be submitted within 285 days of the conclusion of the target year (i.e. by 15<sup>th</sup> January of the assessment year).

IV. **In case of a deficit / shortfall** in RCO compliance at the holding company level after aggregation of RCO compliance at individual DCs, the settlement process will be as follows:

- a. **After Target Year:** In case of deficit / shortfall on completion of the target year, any of the subsidiary DCs can contribute towards compliance by purchase or self-retention of RECs and/or payment of Buyout Price, during the AY compliance window.

The holding company can also purchase RECs, in which case such RECs can be redeemed or self-retained against any of the subsidiary DCs.

The holding company can also redeem or self-retain the RECs self-generated by any of its non-DC subsidiary entities, against any of the subsidiary DCs. In such a case, the holding company will mandatorily provide the documentary evidence of its relationship to such non-DC entity (refer section 8.6 II (d) above for guidance on submitting documentary evidence).

In case of deficit / shortfall on completion of the target year, the Holding company may also identify and assign, from among the subsidiary DCs, a DC responsible for final settlement.

- b. **After Assessment Year Compliance Window:** In case of any deficit / shortfall in RCO compliance on completion of the AY Compliance Window, the same will be allocated to the DC responsible for final settlement. The penalty proceedings will be initiated in the name of this DC responsible for final settlement.

## 8.6 Verification of compliance by the Bureau

- I. BEE will review the RCOs Compliance Report submitted by individual State Designated Agencies.
- II. Whenever required, the Bureau may seek additional information from SDA / REC Registry / DC / SLDC.
- III. The Bureau will conduct review of corporate level compliance where applicable.
- IV. Based on the consolidated RCOs Compliance Report submitted by each SDA, the Bureau will prepare a consolidated National RCOs Compliance Report including individual compliance status of DCs and report the same for the consideration of the Ministry of Power, within fifteen (15) days of receipt of all reports from all SDAs.

## 8.7 Certification and Intimation of DC wise Compliance Status by BEE

A digitally signed certificate will be issued separately for each obligated DC, indicating the compliance / shortfall for the target year, within thirty (30) days of receipt of all reports from all SDAs.

BEE will communicate the status of DC wise RCO compliance based on the certification, to the respective SERCs and SDAs within ten (10) days of certification.

The aggregated annual national and state level RCO compliance information will also be published by BEE on the National RCO Portal (under development).

## 8.8 Summary of Timelines for RCO Compliance Monitoring

- I. Timelines for Annual RCOs Compliance process are as follows:

<b>Activity</b>	<b>Timeline</b>
<b>End of Target Year</b>	<b>T</b>
<b>Submission of Form A and RCO Audit Report with verification by empaneled AEA Agency by DC to SDA, BEE</b>	T + 4M
<b>Submission of Form D by DC to SDA, BEE</b>	T + 4.5M
<b>Submission of Form C in case of Corporate Compliance by Holding Company to BEE (Part A duly filled at a minimum)</b>	T + 4.5M
<b>Verification of Data by SDAs</b>	T + 5M
<b>Submission of clarifications or updating of RCO Reports by DC and empaneled AEA Agency</b>	T + 6M
<b>Finalization and submission of consolidated report by SDA to BEE</b>	T + 7M

<b>Compliance Window (For purchase of REC or Buyout)</b>	T + 9M
<b>Submission of Completed Form C in case of Corporate Compliance by Holding Company to BEE</b>	T + 9.5M
<b>Provision of Information by REC Registry to SDAs, BEE</b>	T + 9.5M
<b>Compliance Verification by BEE and Recommendation to MoP</b>	T + 10M
<b>Certification of compliance by BEE and intimation to SDAs, SERCs/JERC</b>	T + 11M

## 9. Penalties and adjudication

### 1. Intimation of compliance / shortfall to DCs

- I. BEE / SDA will issue notices to DCs for non-submission of RCO compliance report.
- II. BEE / SDA will also issue notices to DCs intimating any shortfall / deficit in RCO compliance.

### 2. Penalties and Adjudication by SERCs


In case an obligated DC fails to comply with the RCOs targets as specified under these guidelines, the said DC shall be liable to be penalized as per Energy Conservation (Compliance Enforcement) Rules, 2025.

Non submission constitutes prima facie violation of the provisions of the Energy Conservation Act, 2001 and specifically attracts penalty under Section 26(4) while, failure to meet Renewable Consumptions Obligations once assessment is undertaken, attracts penalty under the provisions of Section 26(3) of the Act.

## 10. Check verification

1. The Bureau may on its own, or on receipt of a complaint regarding any error or inconsistency or misrepresentation, initiate action for independent review of RCOs Compliance Report in accordance with the sub-section 2 of this section.
2. Such Check Verification may be initiated at any time after the date of verification of energy account (Form A) of the DC by the empaneled AEA or SLDC as applicable, and within six (6) months from the date of certification of RCOs Compliance / Shortfall by Ministry of Power.
3. The Bureau can initiate the action in accordance with the following procedure namely,
  - I. A notice will be issued to the obligated DC as well as empaneled AEA Agency who has submitted the verification report to provide comments in reply to the said notice within ten (10) days from the date of receipt of aforesaid notice.
  - II. The comments furnished by the obligated DC and empaneled AEA Agency should clearly state that:
    - a) They stand by the compliance report and verification report submitted by them and submit a confirmation report giving point wise replies with necessary documents in response to the said notice; or
    - b) They accept the errors or inconsistencies, or misrepresentation pointed out in the aforesaid notice and are required to give detailed explanation in respect to each point in the notice and work out the impacts of such errors or inconsistencies or misrepresentation.
  - III. Within ten (10) days from the date of the receipt of the comments mentioned in 2 (II) above, the Bureau, after taking into consideration the said comments may decide to undertake or not to undertake the independent review and the Bureau will record the reasons in writing for its decision and inform decision in writing to the obligated DC, his empaneled AEA Agency and complainant.
  - IV. Where the Bureau decides to undertake review,
    - a) It will appoint an empaneled AEA Agency, who has not performed the verification functions with respect to the concerned obligated DC, to conduct the independent review
    - b) On a complaint, the independent review will be carried out at the cost of complainant.
4. The independent review process should involve assessment to ensure that:
  - I. The activities relating to RCOs compliance have been performed and the certification of RCOs Compliance / Shortfall are in accordance with these guidelines..
  - II. The monitoring and reporting process are in accordance with these guidelines.
  - III. The details of the data and activities are evaluated, and conclusions then made that errors, omissions or misrepresentation or aggregation thereof in the said data do, or do not affect the RCOs compliance achieved by the activities.

5. The said empaneled AEA Agency is required to assess and verify that the activities performed by the obligated DC for RCOs Compliance are in accordance with the process defined in this procedure, and the assessment and independent review should involve the following:
  - I. A review of the documents as well as the on-site assessment to verify that the activities performed to comply with the RCOs are in accordance with the process defined in these guidelines and in case the aforesaid empaneled AEA agency decides that it was not possible or appropriate to make a site visit, then reasons are required to be recorded in writing in this regard.
  - II. A review of both quantitative and qualitative information on the RCOs compliance, the quantitative information comprising of the reported data in 'Form A', 'Form C' and 'Form D' as applicable, and the qualitative information comprising of information on internal management controls, calculation procedures, procedures for transfer of data, reports, and review of internal field audit of calculations or data transfer.
  - III. A review of previous verification reports.
  - IV. A review of any other information and documents relevant to or having a bearing on the activities performed under the process defined in these guidelines.
  - V. A review of monitoring and reporting processes followed for RCOs compliance.
    - a) The obligated DC should furnish full and complete data, provide necessary documents and other support required by the empaneled AEA Agency for the purpose of performing the function of independent review under the process defined in these guidelines.
    - b) The empaneled AEA Agency undertaking the independent review function is required to report the results of their assessment through an independent review report containing the following:
      - I. The summary of independent review process, results of their assessment and their opinion along with the supporting documents.
      - II. The details of independent review carried out in order to arrive at the conclusion and opinion including the details captured during the verification process and conclusion relating to compliance with RCOs.
      - III. Certification of the results of Check-Verification as per the Form E appended as Annexure 8 to these guidelines.
    - a) If the empaneled AEA Agency records in their independent review report, a positive opinion, it will be concluded that all the requirements with regard to the RCOs compliance and the certification of compliance / shortfall have been met.
    - b) If the empaneled AEA Agency records in their independent review report, a negative opinion, the effect of such opinion on RCOs compliance norms, certification of RCOs compliance / shortfall, the liability of the empaneled AEA Agency in giving the verification report and amount of the unfair advantage by the obligated DC as a result of such verification report will be calculated by the empaneled AEA Agency conducting the independent review.

- 
- c) The empaneled AEA Agency in charge of independent review (check verification) is required to submit their review report with due certification in 'Form E' (as per annexure 8) to the Bureau.
  - d) Where the independent review (check verification) has been initiated on the basis of a complaint received by the Bureau, the cost of independent review needs to be borne by the obligated DC in case it was found during the independent review that the obligated DC has submitted false and incorrect information in Form A

## 11. Fees

1. Each obligated Designated Consumer and each Empaneled AEA Firm is required to pay a non-refundable one-time registration fee of Rs. 15,000 for the purpose of RCO compliance monitoring.
2. Only the Designated Consumers who have registered and paid all due fees as per this provision only, will be able to access the portal for submission of compliance data on the Portal.
3. The fees payment can be made online on the RCO Portal, or by NEFT, and the details of the transaction need to be updated on the RCO portal.
4. The sums received from the fees will be utilized by the Bureau to cover the operational expenses including the cost of development and maintenance of the online RCO Portal, check verification, capacity building activities for Stakeholders and any other operational expenses.

## Annexure – 1: Methodology for estimation of electricity generated from combustion of renewable fuels

The methodology specified hereunder needs to be followed by obligated Designated Consumers for estimating electricity generated from co-firing of renewable fuels in fossil fuel based CPPs including co-gen plants.

The electricity generated from renewable fuels will be estimated at Generator Terminal on a quarterly / monthly basis in accordance with the following formulae:

**Case # 1:** Methodology for estimation of renewable electricity generated from Co-firing of multiple renewable fuels along with fossil fuels in the same boiler in thermal power plants (CPP), including captive and co-gen power plants.<sup>2</sup>

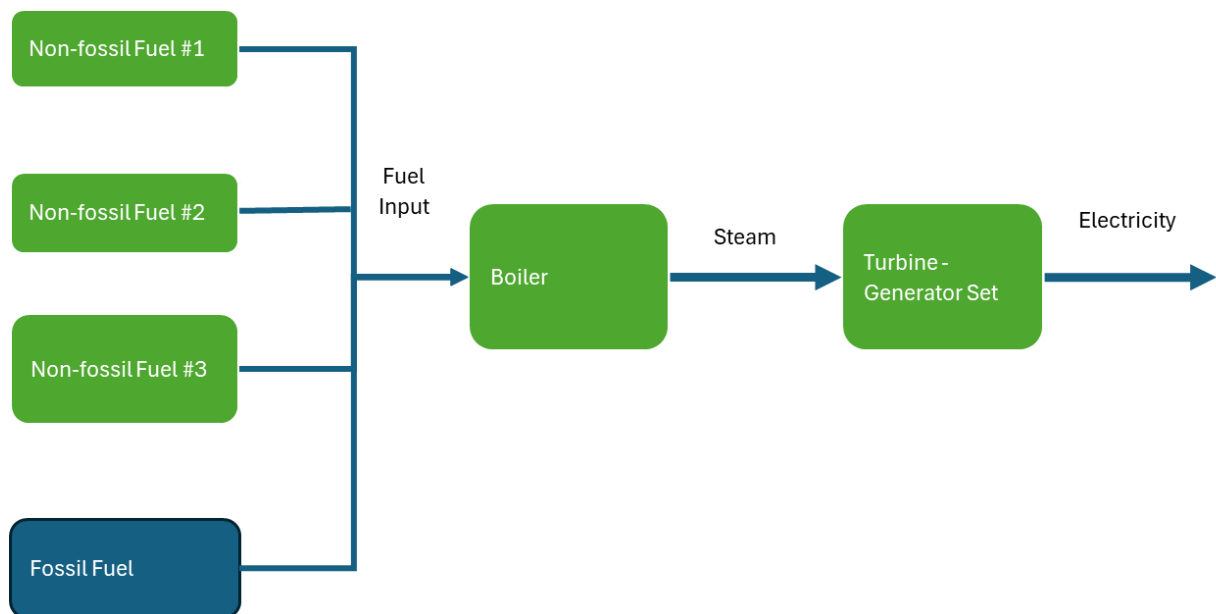


Figure 4: Schematic representation of Case 1- Methodology for estimation of electricity generated from combustion of renewable sources

*Electricity Generation through Co – firing of RE based fuels*

$$= \left( \frac{\text{Energy input through co – fired RE fuel}}{\text{Energy input through total fuel quantity fired}} \right) \times \text{Total Electricity Generation}$$

$$\text{i.e. } Er(G) = \left( \frac{\sum_{i=1}^{i=n} Qr_i \times Gr_i}{\sum_{i=1}^{i=n} Qr_i \times Gr_i + \sum_{i=1}^{i=n} Qf_i \times Gf_i} \right) \times E(GT)$$

Where,

Er(G) = Electrical energy generated by renewable fuels at Generator terminal during the month (kWh);

Qr = Quantity of renewable fuels consumed during the month (kg)

<sup>2</sup> Adapted from the methodology decided by the Central commission in its order dated 18.02.2020 in Suo-moto Petition No. 12/SM/2019

- Gr = Weighted average Gross Calorific Value (GCV) of biomass (other renewable sources) consumed during month (kCal/kg)
- Qf = Quantity of coal or other fossil fuel burnt during the month (kg)
- Gf = Weighted average GCV of coal or other fossil fuel burnt during the month (kCal/kg)
- E(GT) = Gross electrical energy generated at Generator Terminal during the month (kWh)

**Case # 2:** Methodology for estimation of renewable electricity generated by Co-firing of multiple renewable fuels (e.g., black liquor dry solids - BLDS) and fossil fuels, each in separate boiler and with these boilers feeding to a common turbine generator set for electricity generation:

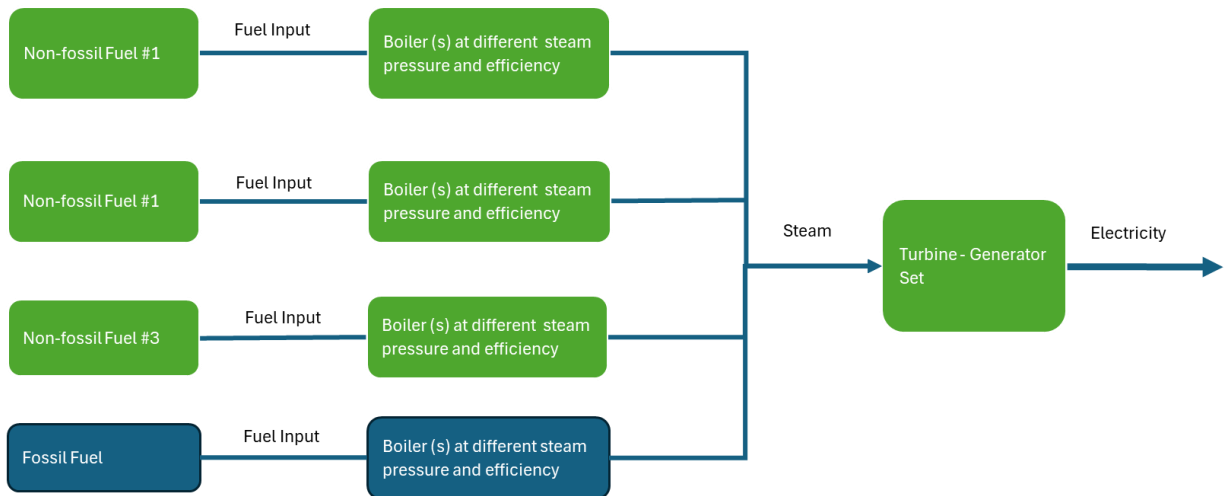


Figure 5: Schematic representation of Case 2- Methodology for estimation of electricity generated from combustion of renewable sources

*Electricity Generation through Co – firing of RE based fuels*

$$= \left( \frac{\text{RE Energy input at turbine inlet}}{\text{Total energy input at turbine inlet}} \right) \times \text{Total Electricity Generation}$$

$$\text{i.e. } Er(G) = \left( \frac{\sum_{i=1}^{i=n} Qr_i \times Hr_i}{\sum_{i=1}^{i=n} Qr_i \times Hr_i + \sum_{i=1}^{i=n} Qf_i \times Hf_i} \right) \times E(GT)$$

Where,

- Er(G) = Electrical energy generated by renewable fuels at Generator terminal during the month (Million kWh);
- Qr = Quantity of steam generated from renewable fuels consumed during the month (Tons);
- Hr = Weighted average enthalpy of steam generated from renewable fuels consumed during month (kCal/kg);
- Qf = Quantity of steam generated from coal or other fossil fuel burnt during the month (Tons);

Hf = Weighted average enthalpy of steam generated from fossil fuel burnt during the month (kCal/kg)

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

**Case # 3:** Methodology for estimation of renewable electricity generated from Co-firing of multiple fossil and renewable fuels in multiple boilers (Combination of Case 1 and Case 2).

$$\text{Electricity Generation through Cofiring of RE based fuels } Er(G) = \left( \frac{\sum_{i=1}^{i=n} Qr_i \times Hr_i \times ERBI_i}{\sum_{i=1}^{i=n} Qr_i \times Hr_i \times ERBI_i + \sum_{i=1}^{i=n} Qf_i \times Hf_i \times ERBI_i} \right) \times E(GT)$$

$$\text{and } ERBI_j = \left( \frac{\sum_{j=1}^{j=n} Qr_j \times Gr_j + (I_p + U_p) \times RER_{pi}}{\sum_{j=1}^{j=n} Qr_j \times Gr_j + \sum_{j=1}^{j=n} Qf_j \times Gf_j + (I_p + U_p)} \right)$$

Where,

Er(G) = Electrical energy generated by renewable fuels at Generator terminal during the month (Million kWh);

Qr = Quantity of steam generated from renewable fuels consumed during month (Tons);

Hr = Weighted average enthalpy of steam generated from renewable fuels consumed during month (kCal/kg);

Qf = Quantity of steam generated from coal or other fossil fuel burnt during the month (Tons);

Hf = Weighted average enthalpy of steam generated from fossil fuel burnt during the month (kCal/kg)

ERBI = Energy Ratio at Boiler Input (ratio of energy from co-firing of non-fossil fuels to energy from firing of all fuels at boiler input);

$I_p + U_p$  = Energy input at WHR Boiler through recovery of heat generated from process (by combustion of fossil fuel and by exothermic reactions) during the month (Mega Cal). Applicable in case of WHR Boiler only. Refer to Case 4 for schematic diagram;

$RER_{pi}$  = Input Energy Ratio of RE Fuels to total Fuels fired at the Process Input. Applicable in case of WHR Boiler only. Refer to Case 4 for schematic diagram;

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

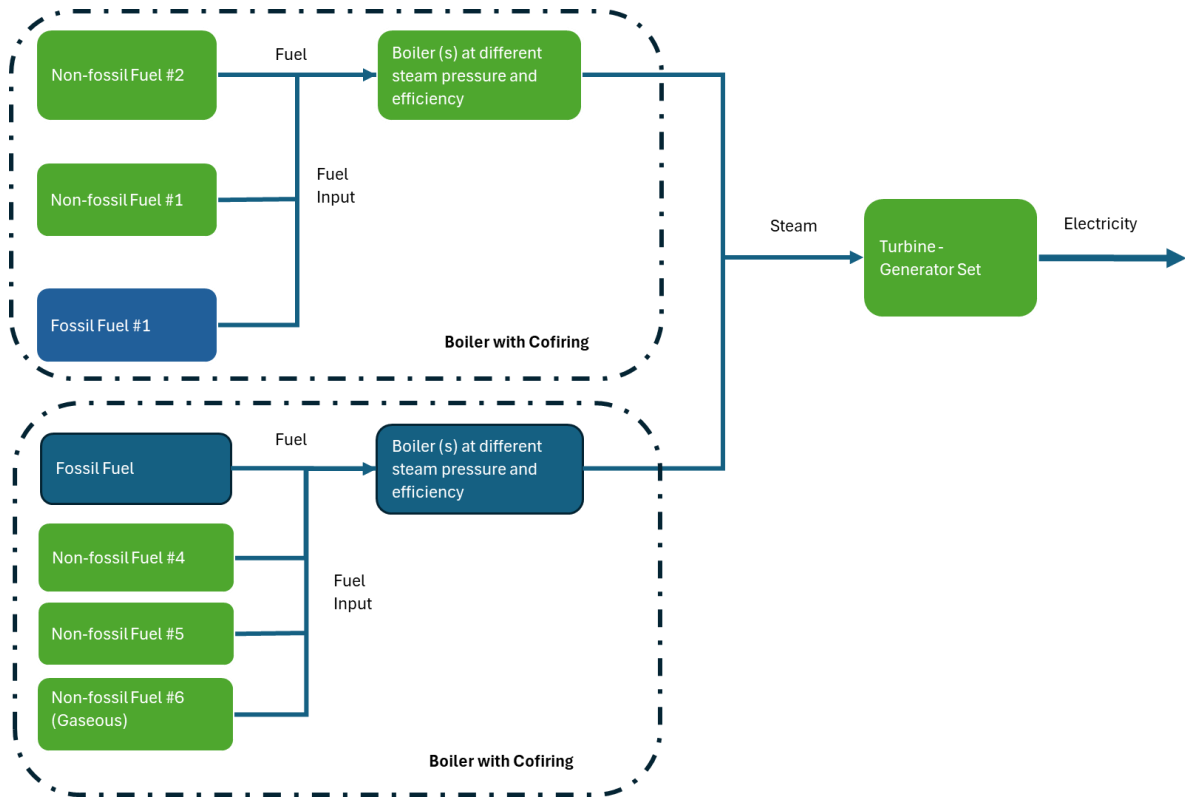


Figure 6: Schematic representation of Case 3 - Methodology for estimation of electricity generated from combustion of renewable sources

**Case # 4:** Methodology for estimation of electricity generated from combustion of other renewable sources like AFR in kiln and Waste Heat Recovery system (WHRS).

*Electricity Generation through Auxliary firing of fossil fuels*

$$= \left( \frac{\text{Energy input through auxiliary firing of RE fuel}}{\text{Total energy input to WHR Boiler}} \right) \times \text{Total Electricity Generation}$$

$$\text{i.e. } Ef(GT)_{AUX} = \left( \frac{\sum_{i=1}^{i=n} Qf_i \times Gf_i}{(I_p + U_p) + \sum_{i=1}^{i=n} Qr_i \times Gri + \sum_{i=1}^{i=n} Qf_i \times Gf_i} \right) \times E(GT)_{WHR}$$

$$\text{and } Er(GT)_{AUX} = \left( \frac{\sum_{i=1}^{i=n} Qr_i \times Gr_i}{(I_p + U_p) + \sum_{i=1}^{i=n} Qr_i \times Gri + \sum_{i=1}^{i=n} Qf_i \times Gf_i} \right) \times E(GT)_{WHR}$$

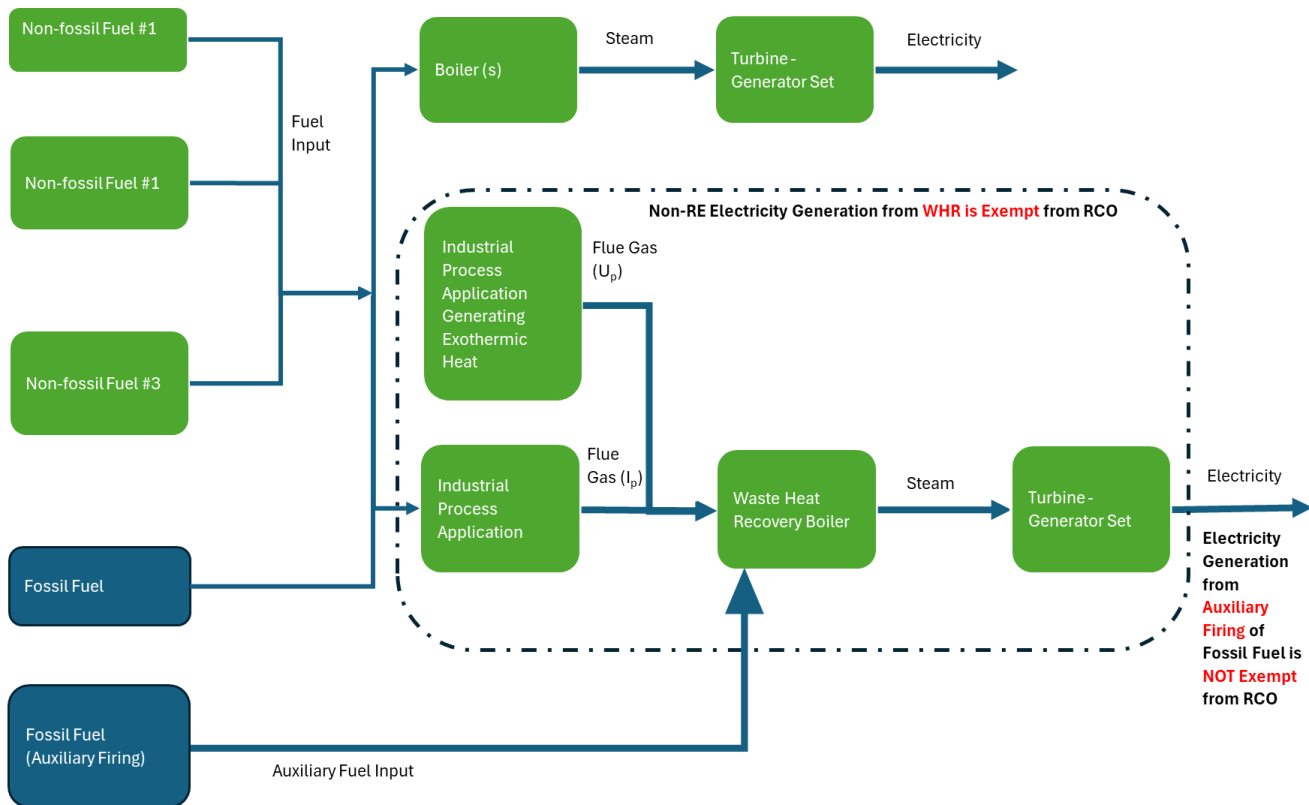


Figure 7: Schematic representation of Case 4- Methodology for estimation of electricity generated from combustion of renewable sources

Where,

$Ef(G)_{AUX}$  = Electrical energy generated at Generator terminal of WHR system by auxiliary firing of fossil fuels during the month (kWh);

$Er(G)_{AUX}$  = Electrical energy generated at Generator terminal of WHR system by auxiliary firing of renewable fuels during the month (kWh);

$Q_f$  = Quantity of steam generated from coal or other fossil fuel burnt during the month (kg);

$H_f$  = Weighted average enthalpy of steam generated from fossil fuel burnt during the month (kCal/kg)

$Q_r$  = Quantity of renewable fuels consumed during the month (kg);

$G_r$  = Weighted average Gross Calorific Value (GCV) of biomass (other renewable sources) consumed during month (kCal/kg);

$I_p + U_p$  = Energy input at WHR Boiler through recovery of heat generated from process (by combustion of fossil fuel and by exothermic reactions) during the month (kCal);

$E(GT)_{WHR}$  = Gross electrical energy generated at Generator Terminal through WHR during the month (Million kWh);

The obligated Designated Consumer are required to maintain and report information to respective SDA, empaneled AEA Agency and the Bureau, in the following manner as part of the RCO reporting process:

- The obligated Designated Consumer is required to maintain separate fuel accounts for fossil fuel and biomass (or other renewable sources), with opening balance, fuel received during the month, fuel consumed, any sales of fuel to external entities and closing balance in tonnes.
- The obligated Designated Consumer is also required to maintain separate Gross Calorific Value (in kCal/kg) accounts for coal and biomass (and each of the other renewable fuels), for all fuel consumed for co-firing during the month.
- GCV will be determined based on Ultimate and proximate analysis of sample of each fuel (i.e. coal, biomass and each of the other RE fuels fired) in an NABL certified Lab (lab may be internal facility with the DC or an external Lab).
- In case of other renewable fuels fired, mass of all gas and liquid fuels will be corrected using the density factor for determination of weighted average GCV.
- These monthly accounts of fuel and GCV, duly signed by the authorized official of the obligated Designated Consumer need to be produced along with the bills towards purchase of fossil fuel and biomass (or other renewable sources) for the verification of empaneled AEA firm.
- Inspection officer or other authorised representative of State Designated Agencies will have the right to witness the GCV testing of renewable fuels and to inspect the captive generation facility during the period when renewable fuels are being co-fired.

## Annexure – 2: Provisional Methodology for estimation of electricity required for production of unit mass of Green Hydrogen

The methodology specified hereunder needs to be provisionally followed by obligated Designated Consumers for estimating electricity required for production of One Ton of Green Hydrogen, till such time that the corresponding norms are notified by the Central Commission or the Central Government as the case may be.

The Ministry of New and Renewable Energy vide office memorandum no. 353/35/2022 – NT, dated 18.08.2023 has defined green hydrogen based on two main types of production routes, namely through electrolysis of water and conversion of biomass to hydrogen. Accordingly, this provisional methodology is specified for these two production routes of green hydrogen.

**Case # 1:** Methodology for estimation of electricity consumption for generation of Green Hydrogen from electrolysis of water

To calculate the electricity consumption for producing 1 kg of green hydrogen through the electrolysis process, the following formula should be used:

$$\text{Electricity Consumption per kg of H}_2 \text{ (kWh)} = \frac{\text{Theoretical Energy Required (39.4 kWh/kg)}}{\text{Efficiency of Electrolyzer}}$$

Where, **Theoretical Energy Required per kg of H<sub>2</sub> (kWh/kg):**

The theoretical energy required to produce 1 kg of hydrogen via electrolysis is approximately 39.4 kWh. (See box below for details)

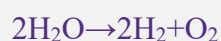
**Electrolyzer Efficiency:**

The efficiency of the electrolyzer typically ranges from 60% to 80%. For example, if an electrolyzer with 70% efficiency is used, you would adjust the energy requirement accordingly.

The theoretical energy required to produce hydrogen via electrolysis can be calculated using the thermodynamic principles of the water-splitting reaction. Here's how to derive it step-by-step:

### 1. The Electrolysis Reaction

The electrolysis of water is represented by the following reaction:



This reaction requires a certain amount of energy to break the bonds in water molecules.

### 2. Standard Gibbs Free Energy Change ( $\Delta G$ )

The theoretical energy requirement can be determined from the Gibbs free energy change of the reaction at standard conditions (25°C and 1 atm). The standard Gibbs free energy change for the electrolysis of water is approximately:

$$\Delta G \approx 237.13 \text{ kJ/mol of H}_2$$

The standard Gibbs free energy change ( $\Delta G$ ) for the electrolysis of water can be calculated using thermodynamic principles. Here's a breakdown of how this value is typically derived:

**Thermodynamic Definition:** The Gibbs free energy change ( $\Delta G$ ) for a chemical reaction at standard conditions (25°C, 1 atm) can be found using the following formula:

$$\Delta G = \Delta H - T\Delta S$$

Where:

- $\Delta H$  = Change in enthalpy (heat content) of the reaction.
- $T$  = Temperature in Kelvin (298 K for standard conditions).
- $\Delta S$  = Change in entropy of the reaction.

**Thermodynamic Data for Electrolysis of Water:** For the electrolysis of water, the relevant thermodynamic data can be found in standard tables:

- **Enthalpy Change ( $\Delta H$ ):** The enthalpy change for the reaction at 25°C is approximately 285.83 kJ/mol for the formation of  $H_2$  and  $O_2$  from water.
- **Entropy Change ( $\Delta S$ ):** The entropy change for the reaction is about 163.15 J/(mol·K), which is 0.16315 kJ/(mol·K).

**Calculating  $\Delta G$ :** Plugging these values into the Gibbs free energy formula,

$$\Delta G = \Delta H - T\Delta S$$

$$\Delta G = 285.83 \text{ kJ/mol} - (298 \text{ K} \times 0.16315 \text{ kJ}/(\text{mol}\cdot\text{K}))$$

$$\Delta G = 285.83 \text{ kJ/mol} - 48.65 \text{ kJ/mol} \approx 237.18 \text{ kJ/mol}$$

This value is often rounded to approximately 237.13 kJ/mol

### 3. Calculate Theoretical Energy per kg of Hydrogen

Since the standard Gibbs free energy is for 1 mole of hydrogen (which is 2 grams of  $H_2$ ) we need to scale it up to find the energy required for 1 kg of hydrogen:

1. Gibbs free energy per mole:

$$\Delta G \approx 237.13 \text{ kJ/mol of } H_2$$

2. Find how many moles are in 1 kg of hydrogen:

$$\text{Molar mass of } H_2 \approx 2 \text{ g/mol}$$

$$\text{Moles in 1 kg of } H_2 = 1000 \text{ g} / 2 \text{ g/mol} = 500 \text{ mol}$$

3. Calculate total energy for 1 kg of hydrogen:

$$\text{Total Energy (kJ)} = 500 \text{ mol} \times 237.13 \text{ kJ/mol} = 118565 \text{ kJ}$$

4. Convert this to kWh:

$$1 \text{ kWh} = 3.6 \text{ MJ} = 3600 \text{ kJ}$$

$$\text{Total Energy (kWh)} = 118565 \text{ kJ} / 3600 \approx 32.9 \text{ kWh}$$

5. Total Energy including the losses of the system

$$\text{Theoretical Energy Required} \approx 39.4 \text{ kWh / kg}$$

Wherein, these losses may include the below mentioned factors

- **Activation Overpotential:** Energy is required to initiate the electrochemical reactions at the electrodes.
- **Concentration Overpotential:** This arises due to the depletion of reactants (water) near the electrode surfaces.
- **Ohmic Losses:** Resistance in the electrolyzer components (electrodes, membranes, etc.) leads to energy loss.
- **Cooling Requirements:** Some systems require additional energy for cooling, especially at high operational rates.
- **Maintenance and Degradation:** Over time, the performance of electrolyzers can degrade, requiring more energy for the same output.
- **Balance of Plant (BoP):** This includes all auxiliary systems (pumps, compressors, control systems) that also consume energy but are not directly involved in the electrolysis process.

This value of theoretical energy required per kg of GH<sub>2</sub> can vary based on temperature and pressure. The value of 39.4 kWh/kg takes into consideration the typical pressure and temperature conditions for commercial production of hydrogen in electrolyzers.

The production of green hydrogen through electrolysis typically occurs under specific temperature and pressure conditions, which can vary depending on the electrolyzer technology used. Following are the general conditions for the main types of electrolyzers:

<b>Type of Electrolyzer</b>	<b>Temperature</b>	<b>Pressure</b>
<b>Alkaline Electrolyzers</b>	Around 60-80°C	Typically operate at atmospheric pressure. Some designs can operate at higher pressures (up to 30 bar) to improve hydrogen production rates and reduce gas separation costs
<b>Proton Exchange Membrane (PEM) Electrolyzers</b>	Around 50-80°C	Can operate at pressures ranging from atmospheric up to 70 bar or more, which enhances efficiency and allows for easier hydrogen storage
<b>Solid Oxide Electrolyzers</b>	Operate at high temperatures, typically between 600-800°C	Often operate at atmospheric pressure but can also function at elevated pressures for specific applications

**A comparison based on National Green Hydrogen Mission Targets:** The National Green Hydrogen Mission targets Five (05) million tonnes of annual production capacity of Green Hydrogen by 2030, supported by 125 GW of renewable energy capacity. A calculation of the energy consumption per kg of Hydrogen based on these national targets compares well with the

corresponding value arrived at using the formula under Case #! of the provisional methodology based on Standard Gibbs Free Energy Change ( $\Delta G$ ).

Description	Units	Value
<b>Based on National Green Hydrogen Mission Targets</b>		
GHM 2030 target for annual GH <sub>2</sub> production capacity	MMT	5
GHM 2030 target for annual GH <sub>2</sub> production capacity	kg	5 x 10 <sup>9</sup>
GHM 2030 target for corresponding RE capacity required for the GH <sub>2</sub> production	GW	125
Annual RE required to achieve annual GH <sub>2</sub> production target	kWh	2.7375E+11
RE consumption per kg of GH <sub>2</sub>	kWh/kg	54.75
<b>Based on Gibbs Free Energy</b>		
Theoretical energy requirement based on Gibbs Free Energy Change	kWh/kg	39.4
Electrolyzer Efficiency (Typical Value)	%	73%
RE consumption per kg of GH <sub>2</sub>	kWh/kg	54.34

Sources: National Green Hydrogen Mission, MNRE; Development of Water Electrolysis in the European Union; International Energy Agency (IEA) - "The Future of Hydrogen" (2019); NREL (National Renewable Energy Laboratory) - Publications on electrolysis technologies and performance metrics.

**Case # 2:** Methodology for estimation of energy consumption for generation of Green Hydrogen from gasification of biomass

**Biomass Gasification:** Organic materials (biomass) can be converted into hydrogen through gasification, where biomass is heated in a low-oxygen environment, producing a gas mixture that can be processed to extract hydrogen. This method can be considered green if sustainable biomass sources are used.

The energy required to produce 1 kg of hydrogen from biomass gasification can vary significantly depending on several factors, including the type of biomass used, the efficiency of the gasification process, and the specific technology employed. However, a general approach to estimate the energy requirement involves a few key considerations.

1. **Energy Content of Biomass:** First, determine the energy content (calorific value) of the biomass feedstock, typically measured in MJ/kg.

2. **Gasification Efficiency:** Identify the efficiency of the gasification process, which can vary but is often around 60-80%. This efficiency represents the percentage of the biomass energy that is converted into usable hydrogen.
3. **Hydrogen Yield:** Estimate the yield of hydrogen produced per kg of biomass. This can also vary but is often in the range of 4-7 kg of hydrogen per ton of biomass (or about 0.004-0.007 kg of hydrogen per kg of biomass).

### Formula

A simplified formula to estimate the energy required to produce 1 kg of hydrogen could be expressed as:

$$E = C / (Y * \eta)$$

Where:

- E = Energy required (MJ/kg H<sub>2</sub>)
- C = Energy content of biomass (MJ/kg)
- Y = Hydrogen yield (kg H<sub>2</sub>/kg biomass)
- $\eta$  = Gasification efficiency (as a decimal, e.g., 0.7 for 70%)

The obligated DC will maintain and report information to respective SDA, empaneled AEA Agency and the Bureau, in the following manner as part of the RCO reporting process:

- For each of the hydrogen electrolyzers, from which the green hydrogen is produced or purchased or sold, the obligated DC is required to maintain the relevant design details like the type / technology variant of the electrolyser (e.g. Alkaline, PEM, Solid Oxide Electrolyser etc.), the respective electrolyser efficiency, source and quantity of green (RE) electricity used etc.
- In case of in-house electrolyzers, the electricity used will be established through dedicated meters for respective electrolyzers, maintained as per CEA metering regulations, along with annual calibration records. In case of purchase of green hydrogen from external sources, the design details of electrolyser need to be sourced by the obligated DC from the respective external party.
- For each of the biomass gasifiers from which the green hydrogen is produced or purchased or sold, the obligated DC is required to maintain the relevant design details like the type / technology variant of the biomass gasifier, Hydrogen yield (kg H<sub>2</sub>/kg biomass) based on biomass properties, Calorific Value of Biomass (MJ/kg) etc.

## Annexure – 3: Model Scope of Work of Empaneled AEA Agency

Empaneled Accredited Energy Auditor Agency has to carry out the RCO Audit focusing on the following Scope of Work at a minimum:

### 1. Data collection and Verification:

- I. Collecting and reviewing the data on the total energy consumption and non-fossil energy consumption in consultation with energy manager, appointed by the designated consumer obligated under RCO.
- II. Verification of energy distribution including consumption from various sources like DISCOMs, own generation, purchase through bilateral agreement etc., and as per the details given in the format (Form A).
- III. Reviewing and validating the collected data through examination of energy bills, production data, inspection of energy-using equipment and instrumentation, discussion or interview with relevant officers and staff at the DC regarding operation of plants, energy management procedures. Establish validated data on quarterly and annual energy consumption.
- IV. Verification of authenticity and accuracy of energy consumption data and other supporting data provided by obligated entity as per the following:
  - a) RCO Notification by MoP
  - b) ‘Operational Guidelines for RCO Compliance Mechanism’ as published by BEE from time to time.
  - c) RCO data collection formats (Form A)
  - d) Issuing compliance certificates (as per Form B) to the obligated DC as required by the MoP and BEE.

### 2. Reporting:

- I. The report should highlight areas of non-compliance and suggest corrective actions.

### 3. Supporting Development and continual improvement of RCO Compliance Monitoring System:

- I. Based on audit findings, providing advisory support and recommendations for establishing, implementing and maintaining and improving a transparent mechanism for monitoring and verification of the RCO compliance.

### 4. Attachments / Enclosures to the Model Scope of Work of Empaneled AEA agency:

- I. Following attachments / enclosures should be ideally provided along with the Scope of Work to the empaneled AEA Agency:
  - a) Data collection formats as per Form A and Form D as prescribed in ‘Operational Guidelines for RCO Compliance Mechanism’ as published by BEE with latest amendments

Annexure – 4: Form – A

Form A for Distribution Licensees

RCO Compliance Data reporting by Distribution Licensee (Form A)							
<b>Section A – Basic Information</b>							
Name of Designated Consumer							
Registration No. of Designated Consumer							
Target Year FY ( _- _ )							
Compliance Period (Quarterly / Annual)							
Location - State							
<b>Section B – Gross Total Electricity Consumption (Fossil based + Non-fossil based)</b>							
<b>Particulars</b>		<b>Unit</b>	<b>Total Electrical Energy</b>				
<b>Purchase and Banking of Fossil based Power (Sub-Total) ***</b>		<b>MU</b>	<b>0.000</b>				
Fossil based Power (Purchase through PPA/Bilateral and through Power Exchange)		MU					
Banking (Receipt) of Electricity <sup>(6)</sup>		MU					
<b>Purchase of Nuclear Power (Not included in RCO Calculations)</b>		<b>MU</b>					
<b>Electricity Sales (Sub-Total) ***</b>		<b>MU</b>	<b>0.000</b>				
Fossil based energy - Sales to entities other than DISCOM consumers (Sales through PPA/Bilateral and through Power Exchange)		MU					
Banking (Supply) of Electricity <sup>(6)</sup>		MU					
<b>Total Electricity Consumption on which Renewable Consumption Obligations is applicable</b>		<b>MU</b>	<b>0.000</b>				
<b>Distribution Losses as % share of Gross Total Electricity Consumption within Discom Periphery <sup>55</sup></b>		<b>%</b>					
<b>Section C – Renewable Electricity Consumption</b>							
<b>Particulars</b>		<b>Unit</b>	<b>Wind RE <sup>(1)</sup></b>	<b>Hydro RE <sup>(2)</sup></b>	<b>Distributed RE <sup>(3) (4)</sup></b>	<b>Other RE <sup>(5)</sup></b>	<b>Total</b>
<b>Own Generation, Purchase *** and Banking of RE <sup>††</sup> (Sub-Total)</b>		<b>MU</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Wind Renewable Energy (Electricity Generation and Purchase)		MU					0.000
Hydro Renewable Energy (Electricity Generation and Purchase)		MU					0.000
<b>Distributed Renewable Energy (DRE)</b>		<b>MU</b>			<b>0.000</b>		<b>0.000</b>
(Electricity Generation and Purchase)		MU					
DRE metered <sup>(7)</sup>		MU					
(Electricity Generation)		MU					
Other renewable energy (Electricity Generation and Purchase)		MU					0.000
Banking (Receipt) of Electricity <sup>(6)</sup>		MU					0.000
<b>RE Sales *** (to entities other than DISCOM consumers) and Banking <sup>†††</sup> (Sub-Total)</b>		<b>MU</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Wind Renewable Energy (Electricity Sales)		MU					0.000
Hydro Renewable Energy (Electricity Sales)		MU					0.000
<b>Distributed Renewable Energy (DRE) (Electricity Sales)</b>		<b>MU</b>					<b>0.000</b>
DRE metered		MU					
Other Renewable Energy (Electricity Sales)		MU					0.000
Banking (Supply) of Electricity <sup>(6)</sup>		MU					0.000
<b>Non-fossil Electrical Energy Consumption for calculation of Renewable Consumption Obligations</b>		<b>MU</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
<b>Renewable Energy Certificates (RECs) <sup>††</sup></b>		<b>MU</b>					<b>0.000</b>
Number of RECs Purchased		No. of Certs.					
Number of RECs Self-Retained		No. of Certs.					
<b>Section D – RCO Compliance Summary (Target Year)</b>							
<b>Particular</b>		<b>Unit</b>	<b>Wind RE <sup>(1)</sup></b>	<b>Hydro RE <sup>(2)</sup></b>	<b>Distributed RE <sup>(3) (4)</sup></b>	<b>Other RE <sup>(5)</sup></b>	<b>Total</b>
RCO (%) specified by MoP <sup>***</sup>		%	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>	<b>0.00%</b>
MoP Renewable Consumption Obligation Target		MU	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>	<b>0.000</b>
Surplus / Deficit <sup>#</sup>		MU			<b>0.000</b>		<b>0.000</b>
Compliance		MU			<b>0.000</b>		<b>0.000</b>
Compliance (%)		%			<b>0.00%</b>		<b>0.00%</b>
Surplus / Deficit <sup>#</sup>		%			<b>0.00%</b>		<b>0.00%</b>
<b>Legend</b>		<b>Data Entry Not Allowed</b>	<b>Data to be Entered by User</b>			<b>Calculated Data</b>	
<b>Undertaking</b>							
I/We undertake that the information supplied in this Renewable Consumption Obligations Compliance Declaration Form For Obligated Designated Consumers is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information results into loss to the Central Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.							
I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.							
For Designated Consumer						For State Load Despatch Center	
Signature and Seal of Energy Manager / MD / CEO						Seal of State Load Despatch Center	
						Signature of Authorised Signatory (GM / Chief Engineer / Director)	
(Please refer to the Instructions & Notes attached to this form and also refer the Operational Procedures issued by BEE)							

## Form A for DCs with CPPs & Open Access

### RCO Compliance Data reporting (Form A) - DCs with CPP & Open Access

#### Section A – Basic Information

Name of Designated Consumer	
Energy Intensive Sector of Designated Consumer	
Registration No. of Designated Consumer	
Type of obligation(s) of Designated Consumer	
Target Year FY ( _ - _ )	
Compliance Period (Quarter / Annual)	

#### Section B – Total Energy Consumption (Fossil based + Non-fossil based)

Particulars	Unit	Total Energy
<b>Own Electricity Generation, Net after deducting Exempted Components and Auxiliary Power Consumption (APC)*** (Sub-Total)</b>	<b>MU</b>	<b>0.000</b>
Total Fossil based electricity generation *	MU	
Fossil based electricity from WHR **	MU	
Fossil based electricity from Waste Energy Recovery (WER) ††	MU	
Ex-Bus Electricity generation from Fossil based Auxiliary Firing in WHR & WER System †††	MU	
Balance Fossil based energy generation other than WHR and WER (1)	MU	0.000
Co-generation component of Balance Fossil based generation (other than WHR and WER) (2)	MU	
APC corresponding to Generation including 50% Cogen and excluding WHR (3)	MU	
<b>Electricity Purchase through Open Access and Banking (Sub-Total)</b>	<b>MU</b>	<b>0.000</b>
Fossil based energy (through PPA/Bilateral and Power Exchanges)	MU	
Banking (Drawl) of Electricity (4)	MU	
<b>Electricity Purchase from Discom (Not included in RCO calculations)</b>	<b>MU</b>	
<b>Electricity Sales and Banking (Sub-Total)</b>	<b>MU</b>	<b>0.000</b>
Fossil based electricity sales (PPA/Bilateral and Power Exchange)	MU	
Banking (Storage) of Electricity (4)	MU	
<b>Electricity Consumption at Aluminium Smelter (if applicable)</b>	<b>MU</b>	
<b>Total Electricity Consumption on which Renewable Consumption Obligations is applicable</b>	<b>MU</b>	<b>0.000</b>

#### Section C – Renewable Electricity Consumption

Particulars	Unit	Total Energy
<b>RE Own Generation, Purchase and Banking ††† (Sub-Total)</b>	<b>MU</b>	<b>20.000</b>
Generation (except firing of RE fuel in CPP) and Purchase of All Renewable Electricity (except purchase from Discom) (5)	MU	20.000
Ex-bus electrical energy generated by combustion of renewable fuels including Co-firing †	MU	
Purchase of Renewable Electricity from Discom (6)	MU	
Banking (Drawl) of Electricity (4)	MU	
<b>RE Sales and Banking ††† (Sub-Total)</b>	<b>MU</b>	<b>20.000</b>
Sale of All Renewable Energy (5)	MU	20.000
Banking (Storage) of Electricity (4)	MU	
<b>Energy Equivalent of GH<sub>2</sub> Consumed **</b>	MU	
<b>Energy Equivalent of Green Ammonia Consumed **</b>	MU	
<b>Total Non-fossil Electricity Consumption for RCO Compliance</b>	<b>MU</b>	<b>0.000</b>
<b>Renewable Energy Certificates (RECs) †††</b>	<b>MU</b>	<b>0.000</b>
Number of RECs Purchased	No. of Certificates	
Number of RECs Self-Retained	No. of Certificates	

#### Section D – RCO Compliance Summary (Target Year)

Particular	Unit	Values
RCO (%) notified by MoP	%	0.00%
Renewable Consumption Obligation Target	MU	0.000
Compliance	MU	0.000
Compliance (%)	%	0.00%
Surplus / Deficit #	MU	0.000
Surplus / Deficit # (%)	%	0.00%

#### Legend:

Data Entry Not Allowed	Data to be Entered by User	Calculated Data
------------------------	----------------------------	-----------------

#### Undertaking

I/We undertake that the information supplied in this Renewable Consumption Obligations Compliance Declaration Form For Obligated Designated Consumers is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information results into loss to the Central Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.  
I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.

For Designated Consumer

AEA Number and Signature of Authorised AEA  
(For Empaneled AEA Agency)

Signature and Seal of Energy Manager / Plant Head

Name and Seal of Empaneled AEA Agency

## Annexure – 5: Form – B

### Certificate of Verification

(To be filled by Empaneled AEA Agency)

We, \_\_\_\_\_ (Empaneled AEA Agency), have independently verified the activities undertaken by M/s. \_\_\_\_\_ (Designated Consumer) for compliance with Renewable Consumption Obligations (RCO) as per renewable consumption norms specified by the Ministry of Power, Government of India for the compliance year FY \_\_\_\_ - \_\_\_\_ and certify that:

- a) Data submitted in the Annual RCO Compliance Assessment Form (Form A) has been collected and verified properly and truthfully.
  - b) Renewable energy consumption through all eligible modes including RECs purchased / self-retained, and the corresponding RCO compliance / shortfall as reported in Form A have been verified properly and truthfully.
  - c) Key compliance results are as follows:
    - i. Total Energy Consumption (MU) = \_\_\_\_\_
    - ii. RCO Target (MU) = \_\_\_\_\_
    - iii. Renewable Energy Consumption (MU) = \_\_\_\_\_
    - iv. REC purchased / self-retained (MU) = \_\_\_\_\_
    - v. Buyout Price paid (MU) = \_\_\_\_\_
    - vi. Total RCO Compliance (MU) = \_\_\_\_\_
    - vii. Surplus / Deficit (MU) = \_\_\_\_\_
  - d) The compliance modes and monitoring/measurement methods adopted have been verified properly and truthfully.
  - e) Due care and professional diligence have been exercised in verification, documentation and preparation of Form A and the verification report.
- 

**Signature:** \_\_\_\_\_

**Authorized Signatory (Empaneled AEA Agency)** (for DCs other than DISCOMs)

**Designation:** \_\_\_\_\_

Seal of (Empaneled AEA Agency) (for DCs other than DISCOMs)

Annexure – 6: Form – C

**CORPORATE COMPLIANCE DECLARATION FORM FOR RCO**

(To be filled by Holding Company of Obligated Designated Consumers)

1	Name of Holding Company	
2	Address	
3	State / UT	
4	Registration No. of Holding Company	
5	Target Financial Year (FY __ - __)	
<b>Part A – Obligated Designated Consumers under Holding Company</b>		
6	Name of Obligated Designated Consumer 1	
7	Registration No. of Obligated Designated Consumer 1	
8	Type of obligation(s) of Obligated Designated Consumer 1 <sup>#</sup>	
9	Name of Obligated Designated Consumer 2	
10	Registration No. of Obligated Designated Consumer 2	
11	Type of obligation(s) of Obligated Designated Consumer 2 <sup>#</sup>	
	...!	
<b>Part B – Gross Total Energy Consumption (Fossil based + Non-fossil based)</b>		
12	Gross Total Energy Consumption for Obligated Designated Consumer 1 (in GWh) (A)	
13	Gross Total Energy Consumption for Obligated Designated Consumer 2 (in GWh) (B)	
	...!	
14	Gross Total Energy Consumption for Obligated Designated Consumer n (in GWh) (C)	
15	Gross Total Energy Consumption for Target Financial Year (in GWh) (D = A+B+...+C)	

<b>Part C' – Gross Non-fossil based Energy Consumption</b>						
†† Please refer to notes below		Wind*	Hydro*	DRE*	Others*	Total RE
16	Gross Non-fossil Energy Consumption for Obligated Designated Consumer 1 (in GWh) (E)					
17	Gross Non-fossil Energy Consumption for Obligated Designated Consumer 2 (in GWh) (F)					
	...!					
18	Gross Non-fossil Energy Consumption for Obligated Designated Consumer n (in GWh) (H)					
19	Gross Non-fossil Energy Consumption for Target Financial Year (in GWh) (I = E+F+...+H)					
<b>Part D – Compliance Transactions through REC during Target Year</b>						
20	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Obligated Designated Consumer 1 (in GWh) (J)					
21	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Obligated Designated Consumer 2 (in GWh) (K)					
	...!					
22	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Obligated Designated Consumer n (in GWh) (L)					
23	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Target Financial Year (in GWh) (M=J+K+...+L)					
<b>Part E – Compliance Transactions through REC and / or Buyout Price (during AY Compliance Window)</b>						
24	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Obligated Designated Consumer 1 (in GWh) (N)					
25	Total of RECs Purchased / Self-retained, and Buyouts Purchased					

	for Obligated Designated Consumer 2 (in GWh) (O)					
	...!					
26	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Obligated Designated Consumer n (in GWh) (P)					
27	Total of RECs Purchased / Self-retained, and Buyouts Purchased for Target Financial Year (in GWh) (Q=N+O+...+P)					
<b>Part F – Compliance to RCOs</b>						
<b>Obligated Designated Consumer 1</b>						
28	RCO (%) specified by MoP (R) <sup>##</sup>					
29	MoP RCO Target (in GWh) (S) <sup>##</sup>					
30	Surplus / Deficit (in GWh) (T=S-E-J-N)					
<b>Obligated Designated Consumer 2</b>						
31	RCO (%) specified by MoP (U) <sup>##</sup>					
32	MoP RCO Target (in GWh) (V) <sup>##</sup>					
33	Surplus / Deficit (in GWh) (W=V-F-K-O)					
...!						
34	RCO (%) specified by MoP <sup>##</sup>					
35	MoP RCO Target (in GWh) <sup>##</sup>					
	Surplus / Deficit (in GWh)					
<b>Obligated Designated Consumer n</b>						
36	RCO (%) specified by MoP (X) <sup>##</sup>					
37	MoP RCO Target (in GWh) (Y) <sup>##</sup>					
38	Surplus / Deficit (in GWh) (Z=Y-H-L-P)					
<b>Holding Company</b>						
39	RCO (%) specified by MoP (AA=BB x 100 / D) <sup>##</sup>					
40	MoP RCO Target (in GWh) (BB=S+V+...+Y) <sup>##</sup>					
41	Final RCO Compliance after AY Compliance Window (in GWh) (CC= I+M+Q)					
42	Surplus / Deficit (in GWh) (DD=BB-CC)					
43	Actual % RE Consumption (RCO Compliance Achieved) (EE = CC x 100 / D)					

Notes:

# Mention each of the type of obligations of the obligated Designated Consumer i.e. Distribution Licensee, and/or Open Access Consumer and/or Captive Power Consumer

! Add more rows as needed for each obligated designated consumer under the common control or ownership of the Holding Company

\* Definition of RE Sources (Wind, Hydro, DRE and Others) shall be as per RCO notification by MoP

## In case an obligated designated consumer has different RCO targets by virtue of its being a Distribution Licensee, and/or Open Access Consumer and/or Captive Power Consumer, then each such separate target in percentage and GWh shall be evaluated separately and the compliance shall be monitored separately.

†† RE Source wise details (Wind, Hydro, DRE and Others) to be filled mandatorily by Distribution Licensees

### **Undertaking**

I/We undertake that the information supplied in this Annual RCO Compliance Declaration Form For Holding Company of Obligated Designated Consumers is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information results into loss to the Central Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.

Signature

Name

Designation

For and behalf of

Name of the Firm/Company/Organization

SEAL of the Firm /Company/Organization

Annexure – 7: Form – D

Form D for Distribution Licensees

**RCO Compliance Data reporting by Distribution Licensee (Form D)**

Section A – RCO Compliance during Target Year	
Name of Designated Consumer	0
Registration No. of Designated Consumer	0
Target Year FY (____)	0
Compliance Period (Quarterly / Annual)	0
Location - State	0

Section B – Compliance Transactions through REC and Buyout during Assessment Year Compliance Window						
<b>Renewable Energy Certificates (RECs) <sup>!!!</sup></b>	<b>MU</b>					<b>0.000</b>
Number of RECs Purchased	No. of Certs.					
Number of RECs Self-Retained	No. of Certs.					
<b>Buyout Certificates</b>	<b>MU</b>					<b>0.000</b>
Number of Buyout Certs Purchased	No. of Certs.					
<b>Total Compliance (RECs + Buyouts)</b>	<b>MU</b>					<b>0.000</b>

Section C – Final RCO Compliance (Assessment Year Compliance Window)						
Particular	Unit	Wind RE <sup>(1)</sup>	Hydro RE <sup>(2)</sup>	Distributed RE <sup>(3) (4)</sup>	Other RE <sup>(5)</sup>	Total
Surplus / Deficit #	MU			0.000		0.000
Compliance	MU			0.000		0.000
Compliance (%)	%			0.00%		0.00%
Surplus / Deficit # (%)	%			0.00%		0.00%

Legend	Data Entry Not Allowed	Data to be Entered by User	Calculated Data
--------	------------------------	----------------------------	-----------------

**Undertaking**  
 I/We undertake that the information supplied in this Renewable Consumption Obligations Compliance Declaration Form For Obligated Designated Consumers is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information results into loss to the Central Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.  
 I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.  
**For Designated Consumer**  
  
**Signature and Seal of Energy Manager / MD / CEO**  
  
 (Please refer to the Instructions & Notes attached to this form and also refer the Operational Procedures issued by BEE)

<sup>!!!</sup> Make an entry here only for the RECs purchased or self-retained during the Assessment Year Compliance Window. Please attach the corresponding Certificate(s) of Purchase covering all the RECs purchased and self-retained.  
<sup>#</sup> RCO Compliance (Surplus / Deficit): Surplus is positive and Deficit is negative number.

## Form D for DCs with CPPs & Open Access

### RCO Compliance Data reporting (Form D) - DCs with CPP & Open Access

#### Section A – Basic Information

Name of Obligated Designated Consumer	0
Energy Intensive Sector of Designated Consumer	0
Registration No. of Obligated Designated Consumer	0
Type of obligation(s) of Obligated Designated Consumer	0
Target Year FY ( _ - _ )	0
Compliance Period (Quarter / Annual)	0

#### Section B – Compliance Transactions through REC and Buyout during Assessment Year Compliance Window

Particular	Unit	Values
<b>Renewable Energy Certificates (RECs) ###</b>	<b>MU</b>	<b>0.000</b>
Number of RECs Purchased	No. of Certificates	
Number of RECs Self-Retained	No. of Certificates	
<b>Buyouts</b>	<b>MU</b>	<b>0.000</b>
Number of Buyout Certs Purchased	No. of Certificates	
<b>Total Compliance (RECs + Buyouts)</b>	<b>MU</b>	<b>0.000</b>

#### Section C – Final RCO Compliance (Assessment Year Compliance Window)

Particular	Unit	Values
RCO (%) notified by MoP	%	0.00%
Renewable Consumption Obligation Target	MU	0.000
Compliance	MU	0.000
Compliance (%)	%	0.00%
Surplus / Deficit #	MU	0.000
Surplus / Deficit # (%)	%	0.00%

#### Legend:

<b>Data Entry Not Allowed</b>	<b>Data to be Entered by User</b>	<b>Calculated Data</b>
-------------------------------	-----------------------------------	------------------------

#### Undertaking

I/We undertake that the information supplied in this Renewable Consumption Obligations Compliance Declaration Form For Obligated Designated Consumers is accurate to the best of my knowledge and if any of the information supplied is found to be incorrect and such information results into loss to the Central Government or any of the authority under them or any other person affected, I/we undertake to indemnify such loss.

I /We agree to extend necessary assistance in case of any enquiry to be made in the matter.

For Designated Consumer

**AEA Number and Signature of Authorised AEA  
(For Empaneled AEA Agency)**

Signature and Seal of Energy Manager / Plant Head

Name and Seal of Empaneled AEA Agency

## Annexure – 8: Form – E

### Certificate of Check Verification

(To be filled by empaneled AEA Agency conducting Check Verification)

We \_\_\_\_\_ the empaneled AEA agency, have undertaken a thorough independent evaluation of the compliance submitted by M/s. \_\_\_\_\_, a obligated designated consumer for renewable consumption norms specified by the Ministry of Power, Government of India for the compliance year FY \_\_\_\_ - \_\_\_\_ and consequent extent of fulfilment or shortfall in renewable energy consumption given in the Form A, and certify that-

- a) the check verification of the total amount of renewable energy consumption in the compliance year through all modes of green and renewable energy consumption including purchase of renewable energy certificates (RECs) by the obligated Designated Consumer and the consequent extent of compliance with renewable consumption norms, and extent of fulfilment or shortfall in RCO compliance given in the Forms A (and Form C where applicable\*) have been carried out diligently and truthfully;
- b) the key results of check verification are reiterated here:

Sr. No.	Parameter	Prior to Check Verification	Post Check Verification
---------	-----------	-----------------------------	-------------------------

i	Total Energy Consumption (MU)		
ii	RCO Compliance Target (MU)		
iii	Total Renewable Energy Consumption (MU)		
iv	Total REC purchased / self-retained (MU)		
v	Total RCO Compliance during Target Year (MU)		
vi	Surplus / Deficit during Target Year (MU)		

- c) all reasonable professional skill, care, and diligence have been taken in check verifying the various verification activities, findings and conclusions, documents, reports, including the compliance assessment document in Form 'A' and Form 'B' and verification report submitted by the empaneled AEA agency appointed by the obligated Designated Consumer \_\_\_\_\_ for verification and the contents thereof are a true representation of the facts.

Signature:

Authorized Signatory on behalf of empaneled AEA agency for Check Verification

Designation:

**Note:** \* strike out if not applicable



Bureau OF Energy Efficiency (BEE)

Bureau of Energy Efficiency,  
4th Floor, Sewa Bhawan, RK Puram, New Delhi, India  
[beeindia.gov.in](http://beeindia.gov.in)