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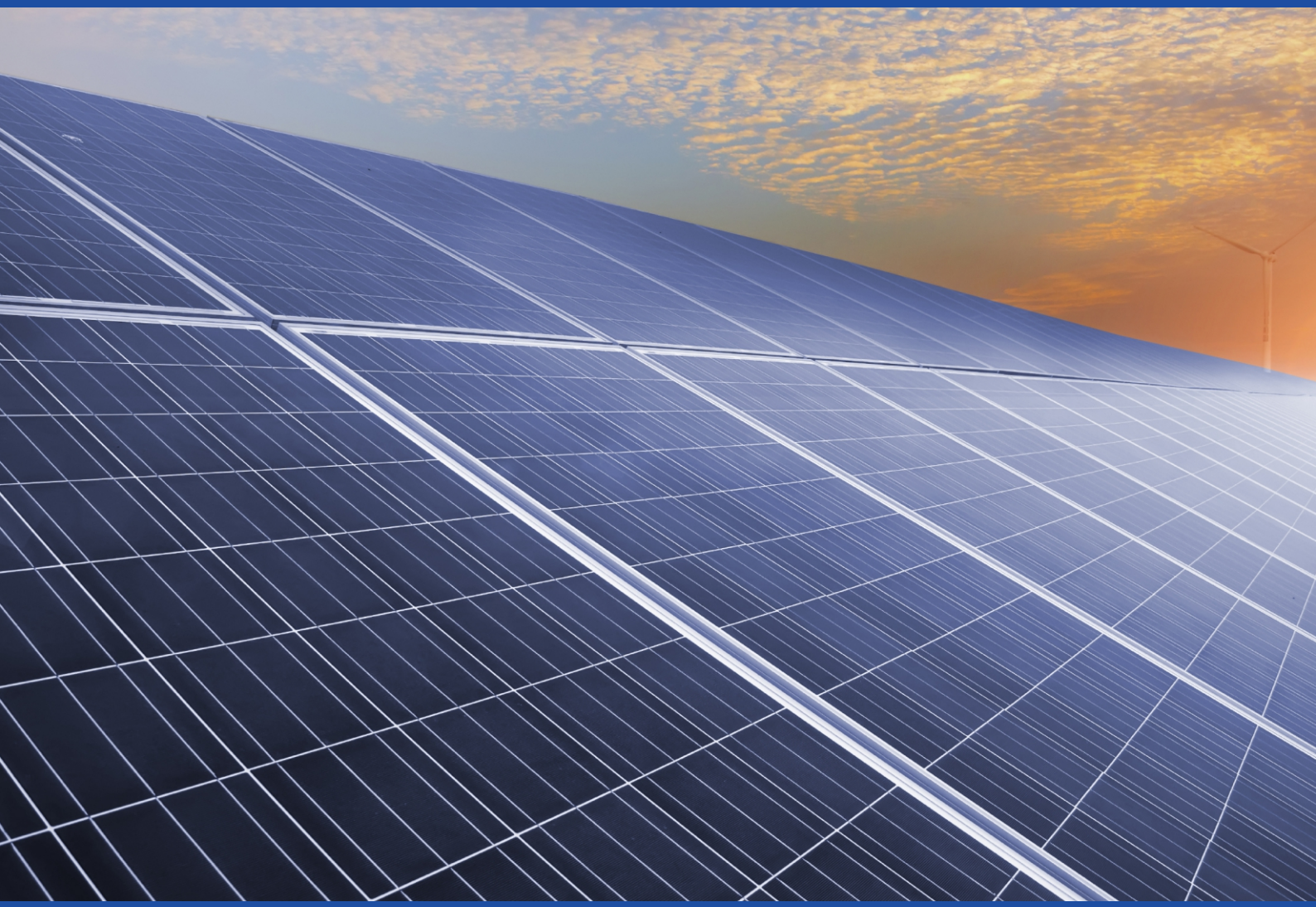
# PACE-D TECHNICAL ASSISTANCE PROGRAM

## White Paper: Renewable Purchase Obligation (RPO) Compliance Monitoring Framework for Rajasthan



**January 2016**

This report is made possible by the support of the American People through the United States Agency for International Development (USAID). The contents of this report are the sole responsibility of Nexant, Inc. and do not necessarily reflect the views of USAID or the United States Government. This report was prepared under Contract Number AID-386-C-12-00001.

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# ACRONYMS

| Acronyms | Definition |
|---|---|
| APTEL | Appellate Tribunal for Electricity |
| ARR | Annual Revenue Required |
| ATE | Appellate Tribunal of Electricity |
| AVVNL | Ajmer Vidyut Vitran Nigam Ltd. |
| CEA | Central Electricity Authority |
| CEI | Chief Electrical Inspector |
| CERC | Central Electricity Regulatory Commission |
| CPP | Captive Power Plant |
| DISCOM | Distribution Company |
| DL | Distribution Licensee |
| EA 2003 | Electricity Act, 2003 |
| EI | Electrical Inspectorate |
| FIT | Feed-in Tariff or Preferential Tariff |
| FOR | Forum of Regulators |
| GEC | Gross Energy Consumption |
| JDVVNL | Jodhpur Vidyut Vitran Nigam Ltd. |
| JVVNL | Jaipur Vidyut Vitran Nigam Ltd. |
| MERC | Maharashtra Electricity Regulatory Commission |
| MNRE | Ministry of New and Renewable Energy |
| MU | Million Units |
| MW | Mega Watt |
| MWh | Mega Watt Hours |
| NAPCC | National Action Plan on Climate Change |
| NLDC | National Load Dispatch Centre |
| NTP | The National Tariff Policy |
| OA | Open Access |
| OAC | Open Access Consumers |
| OE | Obligated Entity |
| PACE-D | Partnership to Advance Clean Energy - Deployment |
| RE | Renewable Energy |
| REC | Renewable Energy Certificate |
| RPO | Renewable Purchase Obligation |
| RPO-CMR | Renewable Purchase Obligation - Compliance Monitoring and Reporting |
| RERC | Rajasthan Electricity Regulatory Commission |
| RRECL | Rajasthan Renewable Energy Corporation Ltd. |
| RSLDC | Rajasthan Skill and Livelihoods Development Corporation |
| RRVPN | Rajasthan Rajya Vidyut Prasaran Nigam Ltd. |
| SA | State Agency |
| SERC | State Electricity Regulatory Commission |
| SLDC | State Load Dispatch Center |
| SNA | State Nodal Agency |
| STU | State Transmission Utility |
| TA | Technical Assistance |
| USAID | United States Agency for International Development |

# 1 OVERVIEW OF RPO FRAMEWORK IN RAJASTHAN

India is becoming one of the world's most attractive markets for renewable energy (RE) investments, primarily due to the effective policy and regulatory support for development of RE technologies. The Ministry of New and Renewable Energy (MNRE) has developed an enabling policy framework that has provided a base for large-scale deployment of RE technologies in India. On the regulatory front, the Central Electricity Regulatory Commission (CERC) and the State Electricity Regulatory Commissions (SERCs), in close engagement with the Forum of Regulators (FOR), have rolled out several regulatory initiatives such as a preferential tariff framework, Renewable Purchase Obligation (RPO), Renewable Energy Certificate (REC) mechanism, etc. to facilitate the growth of RE in the country. The RPO mechanism provides the necessary demand pull for RE power and creates a market for RE in the country.

## 1.1 GENESIS OF RPO

The Electricity Act, 2003 (EA 2003) under Section 86(1) (e) mandates the SERCs to specify a percentage of total consumption of electricity in the area of distribution licensee to be purchased from RE sources. The Tariff Policy notified by the Central Government in compliance of Section 3 of the Act also provides that the Appropriate Commission shall fix a minimum percentage for purchase of energy from non-conventional sources taking into account availability of such resources. Such a percentage of total consumption of electricity in the area of the distribution licensee which is to be procured from RE sources is called RPO. The entities which are mandated to procure the specified quantum of RE are called the 'Obligated Entities (OEs)'.

In line with the spirit of the Electricity Act, 2003 and corresponding policies and with a view to support the RE generation from the different sources, the SERCs have specified purchase obligations from RE sources for the OEs. The REC mechanism has also been evolved to address the geographical disparity on availability of RE resources and to promote investment in RE generation without necessitating the inter-state transmission of RE.

## 1.2 PURPOSE OF RPO COMPLIANCE MONITORING FRAMEWORK

The development of grid interactive renewable power took off with the coming into force of the Electricity Act, 2003 (EA 2003), which, among other things, provides for regulatory interventions for promotion of RE sources through: a) determination of tariff; b) specifying RPO; c) facilitating grid connectivity; and d) promotion of development of market.

The National Tariff Policy (NTP) 2006 requires the SERCs to fix a minimum percentage of RPO from such sources taking into account availability of such resources in the region and its impact on retail tariffs and procurement by distribution companies at preferential tariffs determined by the SERCs. NTP has further elaborated on the role of regulatory commission; mechanism for promoting RE and timeframe for implementation, etc. The policy was amended in January 2011 with an increase in solar-specific RPO from a minimum of 0.25

percent in 2012 to 3 percent by 2022. Further, the National Action Plan on Climate Change (NAPCC) suggests increasing the share of RE in the total energy mix at-least up to 15 percent by 2020.

In view of the aforesaid provisions, the regulatory framework for renewable power is evolving and all major states, CERC, Central Electricity Authority (CEA), etc. are announcing, revising, and modifying renewable power regulatory framework such as RE policy, RPOs, Feed in Tariffs (FITs), REC mechanism, grid connectivity and forecasting provisions, etc. on a regular basis.

## 1.3 STATUTORY AND REGULATORY FRAMEWORK AROUND RPO IN RAJASTHAN

The statutory provision for specifying RPO by the SERCs has been defined under section 86(1) (e) of the Electricity Act, 2003.

**Statutory Provision under the Electricity Act, 2003**

*"… 86 (1) The State Commission shall discharge the following functions, namely: -*
*...(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licence;*
*"*

In discharge of its duties stipulated under the above provision, the Rajasthan State Electricity Commission (RERC) notified the RERC (Power Purchase and procurement process of distribution licensee) (first amendment) Regulations, 2006, on November 20, 2006, specifying the minimum share of RE percentage in terms of energy consumption by distribution licensees from 2006-07 to 2011-12.

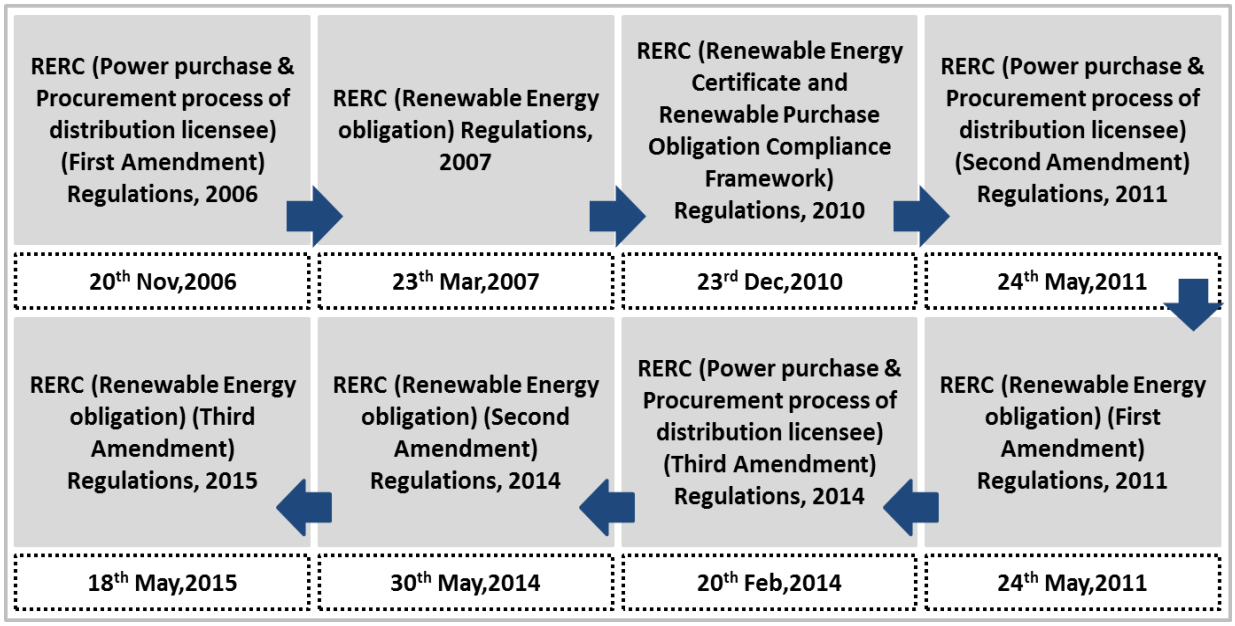
Further, in order to specify the minimum share of RE percentage in terms of energy consumption by open access and captive consumers, the Commission notified RERC (Renewable Energy Obligation) Regulations, 2007, on March 23, 2007. These regulations stipulated the share of RE to be procured by open access and captive consumers from 2006-07 to 2011-12.

In order to operationalize the REC framework, the CERC notified the CERC (terms and conditions for recognition and issuance of Renewable Energy Certificate for Renewable Energy Generation) Regulations, 2010 on January 14, 2010. The REC framework was introduced in the state of Rajasthan through the RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010 notified on December 23, 2010.

Since the RPO and REC regulations notified earlier by RERC were applicable to all OEs only up to 2011-12, the Commission notified RERC (power purchase and procurement process of distribution licensee) (second amendment) Regulations, 2011, and RERC (Renewable Energy Obligation) (first amendment) Regulations, 2011 on May 24, 2011 specify the minimum share of RE percentage in terms of energy consumption by distribution licensees, and by open access and captive consumers respectively from 2011-12 to 2013-

14. Further, the Commission also issued RERC (power purchase and procurement process of distribution licensee) (Third Amendment) Regulations, 2014 on February 20, 2014 in order to specify the minimum share of RE percentage in terms of energy consumption by distribution licensee from 2014-15 through 2016-17 and separate notification to specify RPO targets for open access and captive power producers from 2014-15 through 2016-17 under RERC, Renewable Energy Obligation, Second and Third Amendment dated May 30, 2014, and May 18, 2015, respectively.

**Figure 1: Evolution of Regulatory Framework for RPO in Rajasthan**




## 1.4 RPO TRAJECTORY SPECIFIED IN RAJASTHAN

As per the recently notified RERC (power purchase and procurement process of distribution licensee) (Third Amendment) Regulations, 2014, the total RE to be purchased by the distribution utilities to meet their RPO targets is 9 percent, 10.2 percent and 11.4 percent of the total energy consumption of the distribution licensee for FY 2014-15, FY 2015-16 and FY 2016-17 respectively. This quantum consists of the obligation of procurement of wind energy, solar energy as well as biomass energy. The regulations governing the RPO applicable to captive and open access consumers for period starting FY 2014-15, FY 2015-16 and FY 2016-17 have also been notified by the Commission. Table 1-1 shows the source wise break-up of RPO applicable on different types of consumers in the state of Rajasthan.

**Table 1-1: RPO Trajectory in Rajasthan**

| Sr. No | Year | RPO targets for Discom, CPP and OA Consumers (10 MW and Above) | | | For CPP and OA Consumers Above 1 MW but Below 10 MW |
|---|---|---|---|---|---|
| | | Non-Solar (%) | Solar (%) | Total (%) | Total (%) |
| 1 | FY 14-15 | 7.50 | 1.50 | 9.00 | 9.00 |
| 2 | FY 15-16 | 8.20 | 2.00 | 10.20 | 10.20 |
| 3 | FY 16-17 | 8.90 | 2.50 | 11.40 | 11.40 |

Source: RERC, 2014

It is noteworthy that there is no technology specific RPO proposed for captive power plants (CPP) and open access (OA) consumers below 10 MW.

## 1.5 LEGAL ISSUES SURROUNDING RPO APPLICABILITY IN RAJASTHAN

Captive power consumers in Rajasthan approached the Rajasthan High Court against the RERC obligation on the CPPs and OA consumers to purchase minimum energy from renewable sources and to pay surcharge in case of shortfall in meeting out the RE obligation. On August 31, 2012, the Rajasthan High Court dismissed the appeal by CPPs and OA consumers that challenged the RPO regulations enacted by the state regulator. The key points contested by the petitioners (CPPs and OA consumers) in the petition were:

- RERC did not have the authority to pass the order of RPO and impose surcharge (penalty) as CPP and OA were completely de-licensed activities under the Electricity Act, 2003 (EA 2003).
- EA 2003 only allows RPO on the 'total consumption in the area of the distribution licensee' and therefore intends to apply RPO on distribution licensees only.

The petitioners supported their statement by stating:

> *"The National Electricity Policy as well as Tariff Policy was framed to promote production of energy and utilization. Under the Policy neither any license nor any approval from any authority is required to install a captive power plant. Thus, the Regulatory Commission had no jurisdiction to impose any obligation. Penalty in the form of surcharge cannot be imposed unless there is a direct provision enabling the Regulatory Commission to do so and since, there is no such provision in the Act of 2003, penalty cannot be said to be within the authority of the Regulatory Commission and thus, imposition of surcharge is bad in law."*

The High Court rejected the petition stating:

- The word 'total consumption' has been used in the EA 2003, and should be considered as total consumption in the area of distribution licensee in all modes. Total consumption should be seen by consumers of distribution licensee, captive power plants and on supply through distribution licensee. It cannot be inferred by mention of area of distribution licensee that only consumers of the distribution licensee are included.
- The objective behind imposition of RE obligation is in the greater public interest. The constitution casts duty on the Regulatory Commission to protect and improve the natural environment. This duty can be imposed on CPP and OA as well.

### The Hon'ble Supreme Court Judgement

Aggrieved with the order of High Court, the petitioned subsequently filed an appeal before the Hon'ble Supreme Court against the High Court judgment. Wherein, the Hon'ble Supreme Court of India in its judgment dated May 13, 2015 (Civil Appeal No. 4417 of 2015) in the matter of Hindustan Zinc Ltd. Vs. Rajasthan Electricity Regulatory Commission has upheld the RPO Regulations of the Rajasthan Electricity Regulatory Commission, whereby the court has ruled that the Commission is right in treating open access and captive consumers as OEs under the RPO framework and thus the RPO targets shall apply to them.

**The Hon'ble Supreme Court rejected the petition stating:**

- The provisions requiring purchase of minimum percentage of energy from renewable sources of energy have been framed with an object of fulfilling the constitutional mandate with a view to protect environment and prevent pollution in the area by utilizing renewable energy sources as much as possible in larger public interest.
- The purchase of nominal quantum of energy from renewable resources cannot adversely affect the cost effectiveness of the captive power plant. Moreover, the object being reduction of pollution by promoting renewable source of energy, larger public interest must prevail over the interest of the industry herein which will in any case pass on the extra burden, if any, will be as part of the cost of its products and therefore, the same does not burden the appellants.
- Considering the global warming, mandate of Articles 21 and 51A(g) of the Constitution, provisions for the Act of 2003, the National Electricity Policy of 2005 and the Tariff Policy of 2006 is in the larger public interest. Regulations have been framed by RERC imposing obligation upon CPPs and OA consumers to purchase electricity from renewable sources. The RE obligation imposed upon CPPs and OAs through impugned regulation cannot in any manner said to be restrictive or volatile of the fundamental rights conferred on the appellants under Articles 14 and 19(1) (g) of the Constitution of India.

## 1.6 JUDGEMENT BY APPELLATE TRIBUNAL OF ELECTRICITY (ATE) ON RPO COMPLIANCE

In some of the recent appeals filed by the associations of wind energy generators, developers and manufacturers of wind turbines and association of developers of small hydro power projects before the ATE, direction sought from Tribunal regarding compliance of RPO by the distribution licensees and other OEs as specified by the State Commissions. The major issues highlighted in the appeals include:

- The State Commission has failed to implement RPO Regulations in discharging their obligations, as they are allowing time and again deferment of compliance of the RPO, contrary to terms of the Regulations.
- Despite of availability of RECs, distribution licensees are not procuring RECs and the State Commission in such cases have been allowing carry forward the RPO thereby adversely affecting RE generators who have opted for REC.
- NAPCC has recommended strong regulatory measures to fulfil the RE target.

The ATE passed in its Judgment dated April 20, 2015, on appeals No. 1, 2, and 4 of 2013. The ATE observed that some of the SERCs are not complying with RPO regulations. The relevant extract of the judgment is reproduced as following:

> *"While we accept that a number of State Commissions have been monitoring the compliance of the RPO Regulations by the obligated entities as per their Regulations, in some States it is not being done regularly. We find that some* ***State Commissions do not have compliance status even for FY 2012-13.*** *Some State Commissions*

*have not responded to the notice and have not filed any response. It is also borne out by submissions made by Ministry of New and Renewable Energy and the Central Commission* ***that many obligated entities have not been fulfilling their RPOs and are also not resorting to purchase of REC*** *which has been provided for in the Regulations as a valid instrument for fulfilling the RPO. Some of the* ***State Commissions have been allowing carry forward of the RPO even though RECs are available,*** *in violation of their own Regulations. Some of the* ***State Commissions have not been regularly and timely monitoring the compliance of the RPO Regulations*** *and not giving appropriate directions to the obligated entities as are provided for in the RPO Regulations. MNRE has stated that obligated entities are ignoring the requirement of RPO compliance since there is no indication of enforcement of penal provision which is resulting in slow growth of renewable energy generation. Therefore, we feel that it would be necessary for us to give some directions to the State/Joint Commissions under Section 121 of the Electricity Act, 2003."*

The ATE issued several directions under Section 121 of the Act. The main highlights are given as following:

1. SERCs should decide RPO targets before commencement of the mutli-year tariff period to give adequate time to the distribution licensees to plan and arrange procurement of RE sources and enter into power purchase agreements with RE project developers.
2. Distribution company (DISCOM) should submit plan for RE/REC purchase as part of tariff petition to SERCs.
3. Monitoring of RPO compliance should be carried out periodically as provided in the Regulations.
4. SERCs can carry forward/review RPO strictly as per the regulations keeping in view that non-availability of REC is a precondition for carry forward as per ATE judgment in Appeal No. 258 of 2013 and Appeal No. 21 of 2014.
5. In case of default, penal provision as provided by the state regulations should be exercised.
6. Power to relax and exempt RPO should be exercised judiciously under exceptional circumstances.

## 1.7 STATUS OF RPO COMPLIANCE MONITORING IN INDIA

Most states, except Sikkim, have specified their non-solar and solar RPOs. However, compliance monitoring and enforcement of the RPO targets is far from what is desired by the industry. This lack of compliance monitoring is also responsible for the weak performance of the REC market. In the case of distribution licensees, RPO compliance, monitoring and verification takes place as part of the annual performance review exercise. However, no such mechanism exists in case of RPO compliance monitoring and reporting of CPP/OA users. Even in the case of distribution licensees, quarterly/monthly compliance reporting and transparent information exchange will go a long way in ensuring timely RPO compliance and proactive steps/regulatory interventions for ensuring better performance. Table 1-2 summarizes the efforts by some of the states in ensuring RPO compliance monitoring.

**Table 1-2: RPO Compliance Monitoring Status in India**

| | Maharashtra | Gujarat | Chhattisgarh | Madhya Pradesh | Uttarakhand | Rajasthan |
|---|---|---|---|---|---|---|
| **CPP/OA Consumers Recognized as OEs in RPO Regulations** | Yes<br>OA: 1 MVA and above<br>CPP: 5 MW and above | Yes<br>CPP: 5 MW and above | Yes<br>CPP: 1 MW and above | Yes | Yes | Yes<br>CPP: 1 MW and above |
| **Suo-Motu Initiatives/ Order by SERC on RPO Compliance Monitoring** | Yes | Yes | Yes | Only for solar (Order on petition) | Yes | No |
| **Provision for Consequence of Non-Compliance** | Yes<br>(OE to pay RPO regulatory charge-utilization is Commission's prerogative) | Yes<br>(OE to pay to form fund-utilization is Commission's prerogative - Penalty linked to breach of licence condition for DISCOM) | | Yes<br>(OE to pay to form fund utilization is Commission's prerogative - Penalty linked to breach of licence condition for DISCOM, default in RPO liable for Section 142 penalty) | | |
| **Penalty on OEs for Non-Compliance of RPO** | No | No | No | Yes | Yes | Yes |
| **SNA Initiatives for RPO Compliance Data Collection and Reporting** | Yes | No | Yes | No | Yes | Yes |

Indian states, barring a couple, have not initiated the activities on RPO compliance monitoring and reporting. Activities in these select states are itself at a very nascent stage.

## 1.8 TECHNICAL ASSISTANCE FROM PACE-D TA PROGRAM

RPO compliance monitoring is crucial to ensure that RPO targets are met and at the same time non-compliance is brought to the regulators attention in a timely manner for necessary regulatory action. While RPO compliance monitoring for distribution licensees takes place through the Annual Revenue Required (ARR)/annual performance review exercise before the SERC, the compliance monitoring for other OEs like CPP and OA consumers is far from satisfactory. The technical assistance activity for RPO compliance reporting to RERC by Rajasthan Renewable Energy Corporation Ltd. (RRECL) aims to assist RRECL in developing a framework at the organization level for RPO compliance reporting including creation of a cell for RPO compliance reporting. The technical assistance interventions can be classified into organization level interventions and process level interventions.

**A. Organization Level Interventions:**

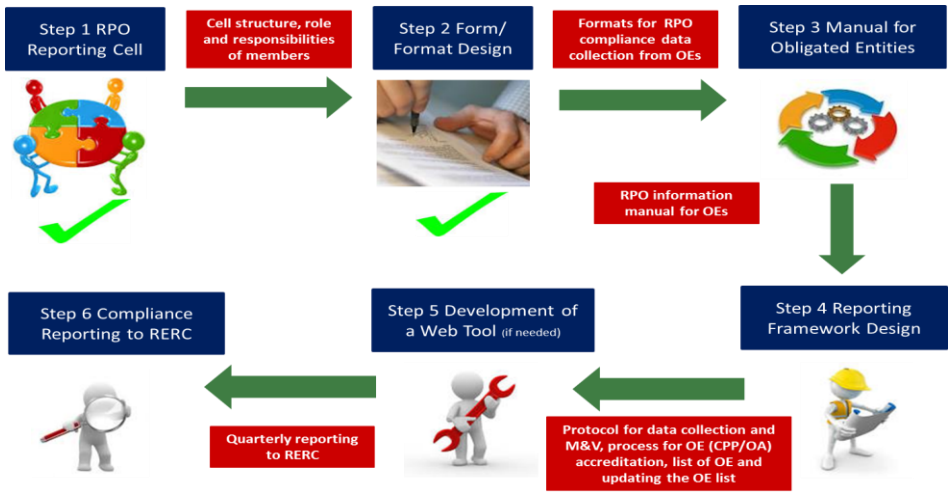
1. Assistance in creation of RPO compliance reporting cell within RRECL for implementation of the monitoring framework and actual monitoring of RPO compliance.
2. Assistance in defining the roles and responsibilities of the cell.
3. Assistance in defining the structure of the cell including manpower requirements.
4. Assistance in the development of systems, processes, IT architecture, etc. for the RPO compliance reporting cell.

**B. Process Level Interventions:**

1. To define the data collection requirements and periodicity of that data collection from various OEs (distribution companies, OA/CPP consumers).
2. To review existing formats (if any) for data collection for RPO compliance of OEs, and if available, ensure standardization of these formats across various consumer categories for data collection/verification.
3. To design the standard formats (if not yet developed) for data collection for RPO compliance of OEs.
4. To suggest a methodology and protocol for the collection and collation mechanism (of data preferably using IT-based interface) from consumers and DISCOMs.
5. To suggest a methodology and process protocol for reviewing energy accounting for CPP/OA consumers and protocol for verification/validation of RPO data.
6. To assist in the development of a manual for OEs and publish on RRECL website. The manual will provide information to OEs on their RPO and the ways to fulfil it. It will also include role of various agencies and a process chart to help OEs understand the process for RPO compliance.
7. To devise a methodology for periodically updating (adding) the details of CPP/OA consumers.
8. To assist in the development of a Web-based tool for RPO compliance reporting (if feasible).
9. To design broad outline for a Web-based tool.
10. It is understood that support under this activity is limited to assisting RRECL to draw up the functional specifications and provide support in engaging/sourcing IT expert and guiding through the process.
11. It is envisaged that RRECL shall separately engage IT expert/tools/hardware/ software for this activity, as may be necessary.

Figure 1-1 explains the step wise approach of the PACE-D TA Program for assistance in the development of RPO compliance reporting framework in the State of Rajasthan.

**Figure 1-1:- Approach for RPO Compliance Reporting Framework Development**




The subsequent chapters explain in detail the above mentioned steps for development of RPO compliance framework in Rajasthan.

# 2 RPO COMPLIANCE MONITORING CELL

This chapter highlights the role of the RRECL in RPO compliance monitoring and reporting. At present, RRECL does not have a dedicated team for this activity and RPO compliance, monitoring and reporting (RPO-CMR) cell structure has been proposed along with the roles and responsibilities of key members of the proposed cell.

## 2.1 ROLE OF RRECL IN RPO COMPLIANCE MONITORING AND REPORTING

On June 16, 2010, Rajasthan Electricity Regulatory Commission nominated RRECL as the State Agency (SA) with a mandate1 for monitoring and reporting of RPO compliance of all the OEs, i.e., DISCOMs, OA and captive power projects in the state.

> "*The State Agency shall develop methodology for collection of information from renewable energy generating company, obligated entities, SLDC etc. on regular basis, compile the information to compute the RPO fulfilment by the obligated entities indicating separately the direct purchase of renewable energy as well as purchase through REC mechanism. The information shall be placed on a cumulative basis for each quarter by the State Agency on its website*."
>
> - **RERC**

> "*The State Agency shall submit quarterly status to the Commission in respect of renewable purchase obligation by the obligated entities in the format as stipulated by the Commission and may suggest appropriate action to the Commission if required for compliance of the renewable purchase obligation*."
>
> - **RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010**

Thus, it is RRECL's mandate to a) develop a methodology for RPO compliance data collection, b) design the standard forms and formats and get them approved by the Commission, and c) submit a quarterly status report on RPO compliance to the Commission and place the information on its website.

At present, RRECL does not have an updated comprehensive list of OA and CPP consumers that fall under the category of OEs. It has also not yet designed a methodology for collection of data from OEs. This is largely due to:

1. Lack of dedicated manpower for RPO compliance monitoring and reporting.
2. Lack of awareness on issues associated with RPO compliance.

There is a requirement of a dedicated cell for RPO-CMR to carry out the mandate of RRECL as specified by the State Commission.

[1] Clause 6 of Rajasthan Electricity Regulatory Commission (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010.

***State Level Implementing Agency for RPO Compliance Monitoring***
*State Commissions typically follow two options to entrust the responsibility for implementing agency for RPO compliance monitoring at the state level viz. (a) State Nodal Agencies (SNAs) (e.g., Maharashtra Energy Development Agency, Gujarat Energy Development Agency, etc. or (b) State Load Dispatch Centre (SLDC) (Tamil Nadu, Karnataka, etc.).*

*Some states are of the view that SLDC being a body responsible for energy accounting should be entrusted with this task. However, many states also opine that entrusting this responsibility on a SNA will be appropriate, as SNAs are responsible for RE promotion, REC accreditation, etc. Accordingly, different RPO Regulations of states have recognized different state agencies. It will be best left for the SERCs of the concerned state to determine the state level implementing agency for the RPO compliance monitoring. But, the need for institutional capacity building and development of dedicated cell for RPO compliance monitoring exists in either case.*

## 2.2 PROPOSED STRUCTURE FOR RPO-CMR CELL

Department/cell structure is the mechanism that operationalizes the management of a department/cell and defines the chain of command within the cell. Before explaining the proposed structure for RPO-CMR cell, it is essential to look at the skill set required for carrying out the tasks of the proposed cell.

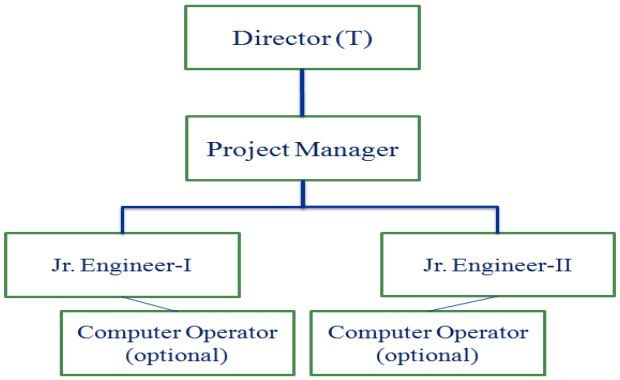
### 2.2.1 Required Skill Set

- **Understanding of RE Sources:** The members must know about various sources of RE and basic operational aspects of RE projects.
- **Engineering Graduates:** The task requires basic understanding of engineering subjects which can enable understanding the working of RE generation technologies, evacuation arrangements, energy accounting and metering arrangements.
- **Understanding of Regulatory Environment in Rajasthan:** Members of the proposed RPO-CMR cell must have the understanding of RERC regulations on RPO and REC. Moreover, the members should be well versed with the regulatory initiatives of other state agencies and SERCs on the issue of RPO compliance. In case the members are not versed of regulations, they can be trained on the regulatory aspects related to RPO after the creation of the cell.
- **Proficiency in Operating the Computers:** As the task of RPO compliance monitoring and reporting requires data storage, data sheet maintenance and update; the members should have proficiency in operating a computer especially basic excel functions. However, computer operators may also do the job of database management if the similar skill set is not available with the existing staff members.
- **Liasioning and Coordination Skills:** Tasks of RPO-CMR cell includes a lot of co-ordination with the distribution licensees and other OEs and hence, the members should have the skills of co-ordination and liasioning.

### 2.2.2 Proposed Structure for RPO-CMR Cell with Roles and Responsibilities

The proposed RPO-CMR cell structure has been designed after having series of discussions with RRECL management.

**Figure 2-1:- Proposed Structure for RPO CMR Cell**




It is worth mentioning that the post of computer operator is optional (in case the junior engineer is not well versed of computer operations). The following tables show the roles and responsibilities of all the members of the proposed RPO-CMR cell.

### 1. Roles and Responsibilities of Director, RPO-CMR Cell

| | |
|---|---|
| **Role Title** | Director, RPO-CMR Cell. |
| **Objective** | Overall co-ordination of RPO compliance monitoring and reporting activity. |
| **Reports to** | Managing Director (RRECL). |
| **Key Responsibilities** | 1. Assistance in designing the RPO compliance reporting framework/process chart for distribution licensees (Jaipur, Jodhpur, and Ajmer).<br>2. Supervision and review of adopted processes and activities of JEs and PM in RPO reporting cell.<br>3. Quarterly reporting of RPO compliance data to RERC.<br>4. Feedback/Suggestions on RPO compliance and enforcement. |

### 2. Roles and Responsibilities of Project Manager, RPO-CMR Cell

| | |
|---|---|
| **Role Title** | Project Manager, RPO-CMR Cell. |
| **Objective** | Collection and compilation of RPO compliance reporting data from distribution licensees. |
| **Reports to** | Director (Technical). |
| **Key Responsibilities** | 1. Assistance in designing the RPO compliance reporting framework/process chart for distribution licensees (Jaipur, Jodhpur and Ajmer).<br>2. Co-ordination with distribution licensees for data collection.<br>3. Collection of data from distribution licensees regarding their RPO compliance in a pre-designed format.<br>4. Any other communication with distribution licensees on RPO compliance reporting.<br>5. Compilation of data in predesigned format for RPO compliance reporting of distribution licensees.<br>6. Co-ordination with both the Junior Engineers in RPO compliance reporting cell.<br>7. Quarterly reporting of RPO compliance data to Director (T).<br>8. Purchasing RECs on behalf of defaulting OEs on RERC directions.<br>9. Record keeping of REC purchase (if any) and other relevant information. |

### 3. Roles and Responsibilities of Junior Engineer I, RPO-CMR Cell

| | |
|---|---|
| **Role Title** | Junior Engineer I, RPO-CMR Cell (open access consumers). |
| **Objective** | Collection and compilation of RPO compliance reporting data from OA consumers. |
| **Reports to** | Project Manager, RPO-CMR Cell. |
| **Key Responsibilities** | 1. Assistance in designing the RPO compliance reporting framework/process chart for OA consumers.<br>2. Preparation and annual/quarterly/biannual update of list of OA consumers in the state.<br>3. Co-ordination with other departments for OA consumer list update.<br>4. Collection of data from OA consumers regarding their RPO compliance.<br>5. Any other communication with OA consumers on RPO compliance reporting.<br>6. Compilation of data in pre designed format for RPO compliance reporting of OA consumers.<br>7. Quarterly reporting to the Project Manager.<br>8. Record keeping with the help of a computer operator (optional). |

### 4. Roles and Responsibilities of Junior Engineer II, RPO-CMR Cell

| | |
|---|---|
| **Role Title** | Junior Engineer II, RPO-CMR Cell (captive power plants). |
| **Objective** | Collection and compilation of RPO compliance reporting data from captive power plants that are OEs. |
| **Reports to** | Project Manager, RPO-CMR Cell. |
| **Key Responsibilities** | 1. Assistance in designing the RPO compliance reporting framework/process chart for CPPs.<br>2. Preparation and annual/quarterly/biannual update of list of CPPs in the state.<br>3. Co-ordination with other departments/agency for CPP list update.<br>4. Collection of data from CPPs regarding their RPO compliance.<br>5. Any other communication with CPPs on RPO compliance reporting.<br>6. Compilation of data in pre designed format for RPO compliance reporting of OA consumers.<br>7. Quarterly reporting to the Project Manager.<br>8. Record keeping with the help of a computer operator. |

Engineers can be assisted by computer operators in order to reduce the burden of clerical and data entry work on engineers.

## 2.3 STANDARD FORMS AND FORMATS FOR RPO COMPLIANCE DATA COLLECTION

The State Agency (RRECL) is mandated to submit quarterly status of RPO compliance by the OEs to the Commission in the format as stipulated by the Commission and may suggest appropriate action to the Commission if required for RPO compliance. Thus, it is important to design the formats for data collection in such a manner that it captures all the data on gross consumption and RE purchase, and it is easy to understand and fill for the OEs.

The standard formats designed for capturing the data on gross energy consumption, technology wise RE procurement and RPO settlement account for all the OEs are provided in Annexure A. The following are the formats for RPO data collection:

- Format 1: Gross Energy Consumption (DISCOM)
- Format 2: RE Procurement (Solar) (DISCOM)
- Format 3: RE Procurement (Wind) (DISCOM)
- Format 4: RE Procurement (Biomass) (DISCOM)
- Format 5: RPO Settlement Account (Solar) (DISCOM)
- Format 6: RPO Settlement Account (Non Solar - Wind) (DISCOM)
- Format 7: RPO Settlement Account (Non Solar - Biomass) (DISCOM)
- Format 8: Gross Electricity Consumption (CPPs)
- Format 9: RE Procurement (CPPs)
- Format 10: Gross Electricity Consumption through OA Consumers
- Format 11: RE Procurement (OA Consumers)
- Format 12: RPO Settlement Account (CPP/OA Consumers)

These forms and formats need to be approved by RERC. Thus, RRECL may approach the Commission for the approval of standard formats for data collection on RPO compliance by various OEs in the state.

# 3 RPO INFORMATION MANUAL FOR OBLIGATED ENTITIES

Lack of awareness on RPO framework and regulatory procedures related to its compliance is often termed as the key reason for non-compliance of obligation by many OEs. The basic purpose for the development of a RPO information manual is to provide know-how of RPO, its applicability, compliance options and methodology to all OEs. RRECL can publish this information manual on its website to educate the OEs especially the CPPs and OA consumers about the RPO framework in Rajasthan.

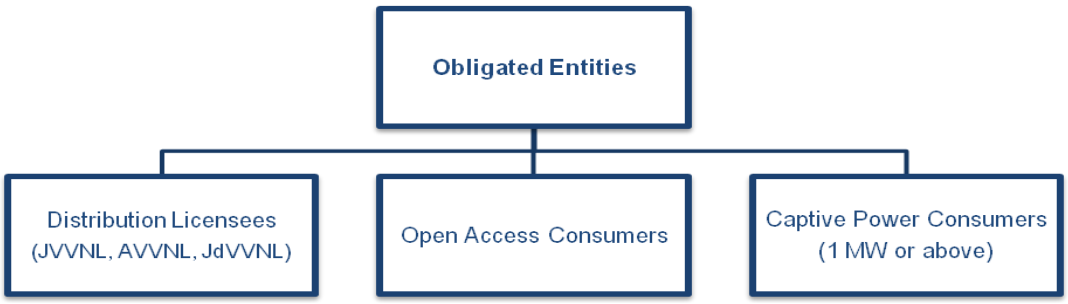
## 3.1 DEFINING THE OBLIGATED ENTITY

As per the RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010, OEs are entities which are stipulated to procure RE as a percentage of their total electricity consumption. Distribution licensees in an area have the responsibility to supply power to all the consumers of its licensed area barring OA consumers and consumers that have captive projects for self-consumption. The quantum/percentage of RE to be procured by OEs is specified in the relevant regulations issued by RERC from time to time (regulatory evolution provided in the previous chapter).

### 3.1.1 Type of Obligated Entities

There are three different categories of OEs, i.e., DISCOMs, OA consumers and CPP consumers. In case of the OA and CPP consumers, regulations specifically classify which entities qualify as OEs on the basis of contract demand and connected load.

**Figure 3-1: Type of Obligated Entities**




-Jaipur Vidyut Vitran Nigam Ltd. (JVVNL)
-Ajmer Vidyut Vitran Nigam Ltd. (AVVNL)
-Jodhpur Vidyut Vitran Nigam Ltd. (JdVVNL)

### 3.1.2 Identification of an Obligated Entity

As per the RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010

*"... these Regulations shall apply to "Obligated Entities" mentioned in RERC (Renewable Energy Obligation) Regulations, 2007, as may be modified from time to time, the existing obligated entities being:*

1. *Distribution licensee including deemed licensee.*
2. *Open access consumer.*

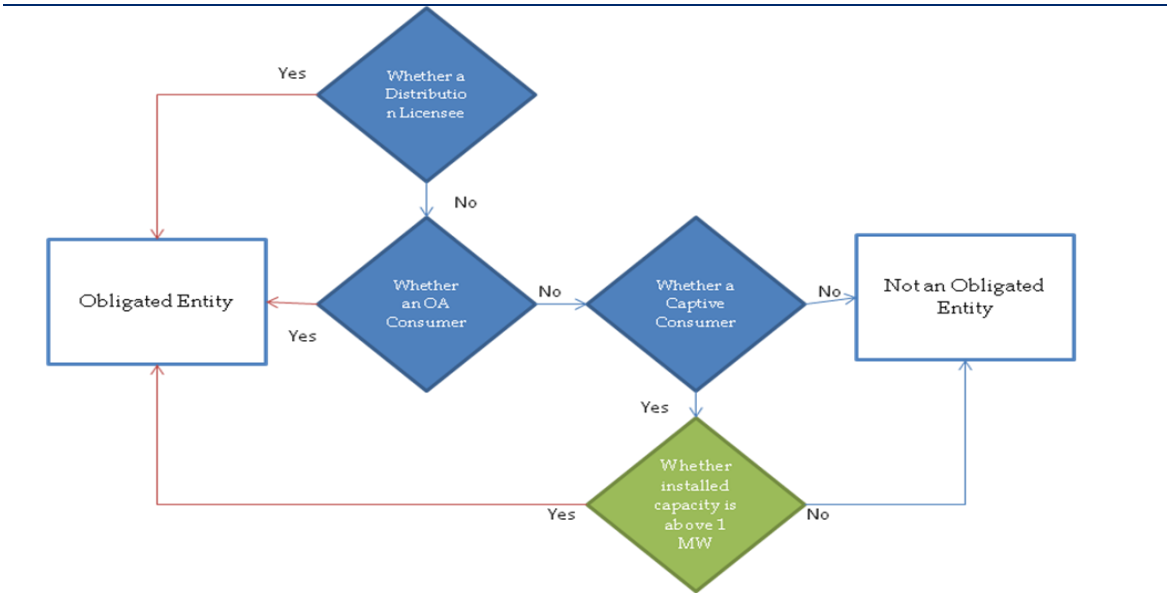
*3. Captive consumer (capacity one MW and above)..."*

Further the RERC (Renewable Energy Obligation) Regulations, 2007 defines captive power plants as:

*"... 'Captive Power Plant' or CPP shall have meaning as assigned in RERC (Tariff for CPP) Regulations, 2007 and shall also include standalone CPP...."*

Figure 3-2 helps identify OEs as per the regulations presently applicable.

**Figure 3-2: Identifying an Obligated Entity**




### 3.1.3 Exemption from RPO

In the case of captive consumers, in Ambuja Cements & Others v/s RERC, the High Court of Rajasthan held that the RERC Regulations stipulating RPO for captive consumers does not suffer from the vice of being ultra vires the provisions of Electricity Act, 2003, National Electricity Policy, 2005 and Tariff Policy, 2006. Subsequently, the petitioner raised the matter to Hon'ble Supreme court, wherein the bench rejected the plea of petitioner stating:

*"… considering the global warming, mandate of Articles 21 and 51A(g) of the Constitution, provisions for the Act of 2003, the National Electricity Policy of 2005 and the Tariff Policy of 2006 is in the larger public interest,* Regulations have been framed by RERC imposing obligation upon captive power plants and open access consumers to purchase electricity from renewable sources. The RE obligation imposed upon captive power plants and open consumers through impugned Regulation cannot in any manner be said to be restrictive or violation of the fundamental rights conferred on the appellants under Articles 14 and 19(1) (g) of the Constitution of India ..."

In the case of Lloyds Metal v/s MERC and Others, wherein the petitioner was praying for separate RPO and preferential tariff for fossil fuel based cogeneration projects. The Appellate Tribunal for Electricity (APTEL) passed a judgement that **electricity produced**

**from fossil fuel-based cogeneration need not be considered as RE** as far as the purchase of RE by an OE under RPO is concerned. Fossil fuel-based cogeneration is not included in the eligible generation sources for meeting a RPO of OEs who have to mandatorily meet their RPO targets under the Regulations. APTEL also ordered that there cannot be a separate RPO for fossil fuel-based cogeneration. However, the State Commission can promote fossil fuel-based cogeneration by other measures such as facilitating sale of surplus electricity available at such cogeneration plants in the interest of promoting energy efficiency and grid security, etc.

## 3.2 MODE OF FULFILMENT OF RPO

An OE can meet its RPO using one or more of the following three options:

4. Procurement of RE power from RE project developers.
5. Self-generation and consumption of RE.
6. Procurement of RECs.

### 3.2.1 Determination of RPO Quantum in Energy Terms

The RPO trajectory in percentage terms has already been defined by RERC for all OEs. Table 3-1 reproduces the source wise break-up of RPO applicable on different types of consumers in the state of Rajasthan.

**Table 3-1:- RPO Trajectory Proposed by RERC**

| Sr. No | Year | RPO targets for DISCOM, CPP and OA Consumers (10 MW and Above) | | | For CPP and OA Consumers Above 1 MW but Below 10 MW |
|---|---|---|---|---|---|
| | | Non-Solar (%) | Solar (%) | Total (%) | Total (%) |
| 1 | FY 14-15 | 7.50 | 1.50 | 9.00 | 9.00 |
| 2 | FY 15-16 | 8.20 | 2.00 | 10.20 | 10.20 |
| 3 | FY 16-17 | 8.90 | 2.50 | 11.40 | 11.40 |

The above percentages indicate the fraction of the total energy *consumption* of the OE that should come from RE. Further, the term consumption has a different meaning for different types of OEs. For example, for distribution licensees, the *consumption* means total electricity *drawn* by the distribution licensee. For an open access consumer, the term means total electricity *procured* by the open access consumer *other than that procured from the distribution licensee,* whereas, for captive consumers, it is the *consumption met through captive generation plant*. The measurement of consumption is to be captured as per the standard formats provided in Annexure A.

### 3.2.2 Eligible Technologies for Fulfilling RPO

As stated earlier, the RERC regulations clearly stipulate the quantum of energy to be procured from different renewable sources of energy by various OEs. For distribution licensees, the RERC (REC and RPO) Regulations stipulate that the solar RPO specifically needs to be fulfilled either by purchase of solar RECs or by procurement of solar energy for which solar RECs have not been issued. Accordingly, biomass RPO can be fulfilled only through the purchase of biomass energy for which RECs have not been issued. The biomass RPO cannot be fulfilled through purchase of RECs since there is no separate REC for biomass energy. RPO from sources other than biomass and solar energy can be met

through the purchase of non-solar RECs or by the purchase of energy from an appropriate renewable energy source.

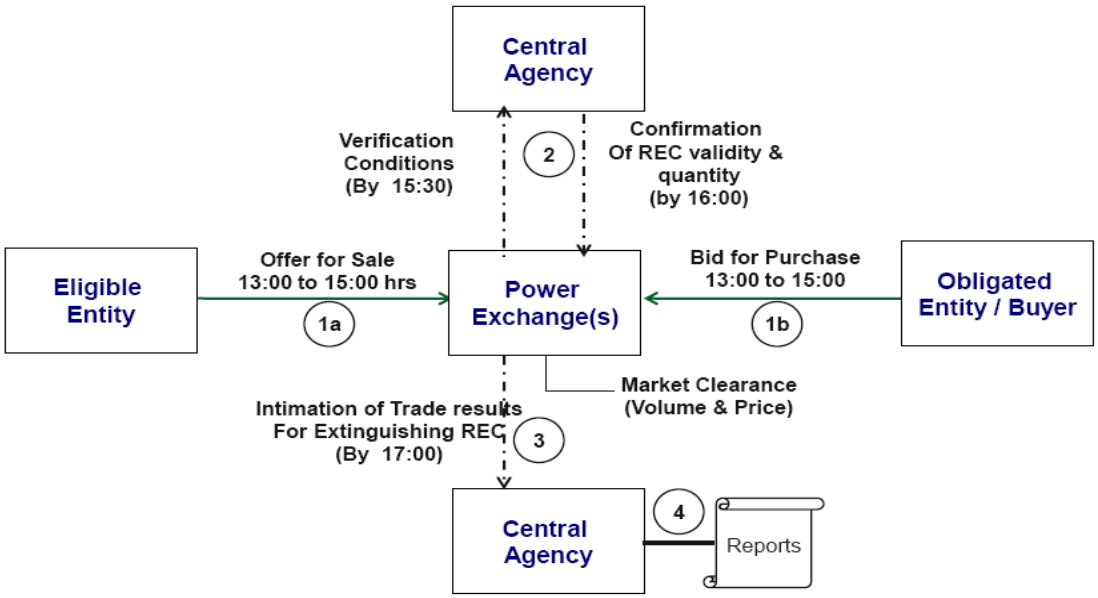
### 3.2.3 Procedure to Procure Renewable Energy

The fulfilment of RPO can be done either through the purchase of RE or through the purchase of appropriate number of RECs. A distribution licensee may procure RE directly from an appropriate producer at the tariff governed by RERC regulations. On the other hand, OA and CPP consumers have the liberty of procuring such RE on a bilateral basis at a mutually agreed tariff. To fulfil their RPO, OEs can procure RE from only those projects against which RECs are issued.

### 3.2.4 Procedure to Purchase RECs

RERC recognises the REC pricing which entails pricing of two components, i.e., the electricity, and the environmental attribute. As such, when a RE producer avails RECs against the energy generated, such a producer can redeem the cost of environmental attributes only through the sale of RECs. The remaining component (electricity) will not have the environmental attribute and cannot be used to fulfil RPO of any OE. The RECs, however, can be procured by the OE through the auction on power exchange for the purpose of meeting the RPO target. In order to purchase the RECs, the OE has to be a member or a client of an existing member in any of the power exchange.

**Figure 3-3: REC Trading Procedure**




- Trading through the closed double sided auction on the last Wednesday of every month.
- Call of bids from 13:00 hrs. to 15:00 hrs. on the auction day.
- Exchanges to intimate the details of maximum sale bid placed by each eligible RE generator to National Load Dispatch Centre (NLDC) (Central Agency) by 15:30 hrs.
- NLDC to check the availability of RECs with the eligible entity by 16:00 hrs.
- Post confirmation from NLDC, power exchanges determine market clearing volume and market clearing price for solar/non-solar RECs by 17:00 hrs.

Each REC is equivalent to 1 MWh of energy. Accordingly, the OEs can procure appropriate number of RECs to meet their RPO targets. Also, as explained earlier, solar RPO can be fulfilled through the purchase of solar RECs and non-solar non-biomass RPO can be fulfilled by purchase of non-solar RECs.

**Illustration 3.1**

For instance, a distribution licensee which has a total consumption of 1,000 MU for year FY 2013-14 will have a total RPO of 82 MU out of which, 57 MU for wind, 15 MU for biomass, and 10 MU will be for solar energy. Such a distribution licensee will be required to procure 15 MU of energy from biomass power producers directly, since, the biomass RPO cannot be fulfilled by purchase of RECs. Theoretically, and licensee may procure 10,000 solar RECs and 57,000 non solar RECs to fulfil the rest of the RPO. The licensee may also procure solar energy or wind energy to meet the RPO and any shortfall in meeting RPO despite procurement of the energy can be met through the purchase of RECs.

## 3.3 RESPONSIBILITIES OF AN OBLIGATED ENTITY

### 3.3.1 Recording the Energy Consumption

It is the duty of the OE to maintain records of energy consumed through various sources throughout the year. Although the RPO compliance monitoring is done on an annual basis, the RERC (REC and RPO) Regulations stipulate that the State Agency should compile RPO data of OEs on its website on quarterly basis. It is advisable that such records are always maintained and compiled by the OEs on a monthly basis and the same is submitted to the State Agency (RRECL) in a timely manner. The parameters to be recorded for energy accounting are given in the detailed forms provided in Annexure A.

### 3.3.2 Timely Reporting

It is the responsibility of the OE to ensure reporting of its energy consumption from various sources as per the forms attached in the Annexure. As explained earlier, RRECL is required to compile RPO data of OEs on its website on quarterly basis. At the same time, RERC stipulates the State Agency to formulate the mechanism for collection of information from the OEs on a regular basis. As per the RERC (REC and RPO) Regulations, the OEs are required to meet the RPO targets on an annual basis only, but for the purpose of ease of data maintenance, collection and compilation, it is advisable that OEs maintain the data on a monthly basis as per the forms attached in the Annexure.

## 3.4 COMPLIANCE MONITORING PROCESS

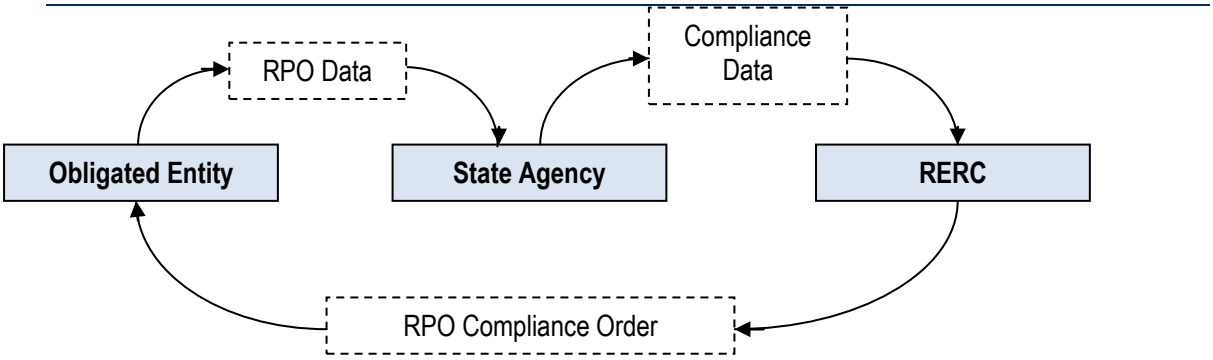
The compliance monitoring is the responsibility of the RRECL (State Agency[2)], in that the State Agency is responsible for timely collection and compilation of RPO compliance data on a quarterly basis and displays the same on its website. The OEs are required to submit information to the SA in the form prescribed by the SA. The SA further submits the

[2] In states such as Andhra Pradesh, Karnataka, Tamil Nadu, Telangana, and West Bengal, the role of state agency Is vested on SLDC.

information regarding the compliance status of the various OEs to the Commission on a quarterly basis in the format stipulated by the Commission.

The compliance enforcement is the responsibility of the Commission as per the Electricity Act, 2003. The Commission may issue appropriate orders or notify regulations in this regard. Figure 3-4 shows the RPO compliance process, the information flow and the entities involved.

**Figure 3-4: Domestic and Non-Domestic Retail Tariff**




## 3.5 PENALTIES FOR NON-COMPLIANCE

Any RE procurement in excess of the RPO targets can be adjusted in the RPO target of the OE for the following year. On the other hand, shortfall in the procurement of adequate amount of RE by the OE may lead to penal action on the OE by the Commission.

An OE which does not fulfil its RPO target is allowed to explain the measures taken by it to procure sufficient amount of RE. If the Commission feels that the OEs faced genuine difficulty in procurement of RE, the Commission may allow carry forward or waiver of the RPO for that year for the particular OE. On the other hand, if the Commission feels that the defaulting OE has not taken adequate measure for procurement of appropriate amount of RE then the Commission may direct the OE to deposit into a separate fund. The fund has to be created and maintained by the OE. An RPO charge as the Commission may determine on the basis of the shortfall in units of RPO and the forbearance price decided by the Central Commission separately in respect of solar and non-solar REC.

The fund so created will be utilized as may be directed by the Commission, partly for purchase of certificates through State Agency and partly for development of transmission and sub-transmission infrastructure for evacuation of power from generating stations based on RE sources. Further, proceedings for non-compliance of the orders of the Commission under section 142 of the Electricity Act, 2003, may also be initiated by the commission on such OEs.

# 4 PROPOSED FRAMEWORK FOR RPO COMPLIANCE MONITORING

## 4.1 KEY DESIGN ISSUES TO BE ADDRESSED FOR RPO COMPLIANCE MONITORING

The Program had several discussions with RRECL on key issues faced by the agency to collect RPO compliance monitoring-related data from various OEs for submission to RERC. These include:

1. Identification and listing of OEs.
2. Verification of data submission by CPP consumers.
3. Verification of data submission by OA consumers.
4. Practical difficulties in monthly data submission.
5. Lack of standard data formats.
6. Standard methodology for energy accounting for computing RPO compliance of OEs.
7. Lack of check on double accounting of RPO compliance.
8. Lack of streamlined RPO-related data flow between OEs and RRECL.
9. Lack of awareness among OEs.

Based on the understanding of these issues, the Program suggested potential solutions to RERCL. Table 4-1 highlights the existing challenges and potential solutions for effective RPO compliance monitoring and reporting.

## 4.2 ISSUE IDENTIFICATION AND POSSIBLE SOLUTIONS

**Table 4-1: Identified Issues and Possible Solutions in RPO Compliance Monitoring**

| Sr. No. | Identified Issues | Possible Solution |
|---|---|---|
| 1 | **Identification of OE and Listing:** The list of CPP/OA OEs in the state with RRECL is not exhaustive. Further, there exist no streamlined process for identification and registration of such OE. RRECL will require considerable support from DISCOMs and office of Electrical Inspectorate (EI) for preparation of list. | To identify the OE and streamline the data collection mechanism, data collection formats in respect of CPP/OA consumers separately on quarterly basis from DISCOMs, SLDC and EI. |
| 2 | **Verification of RPO Compliance Data Submission by CPP Consumers:** The energy generation data submitted by CPPs is self-certified and may not be authentic for the purpose of RPO compliance. | The data received from entities should be further verified and validated through DISCOMs/Rajasthan Load Dispatch Centre/ EI. Same method should be adopted in future for quarterly reporting, verification and validation of RPO data submitted by OEs. |
| 3 | **Verification of RPO Compliance Data Submission by OA Consumers:** Data submission by OA consumers for RPO compliance is not verified. | The data received from entities should be further verified and validated through DISCOMs/RSLDC/EI. Same method should be adopted in future for quarterly reporting, verification and validation of RPO data submitted by OEs. |
| 4 | **Frequency of Data Submission:** Practical difficulties in monthly data submission. | To overcome the difficulties, RRECL may design quarterly basis data collection formats. |
| 5 | **Lack of standard data formats:** | To overcome the difficulties, RRECL may |

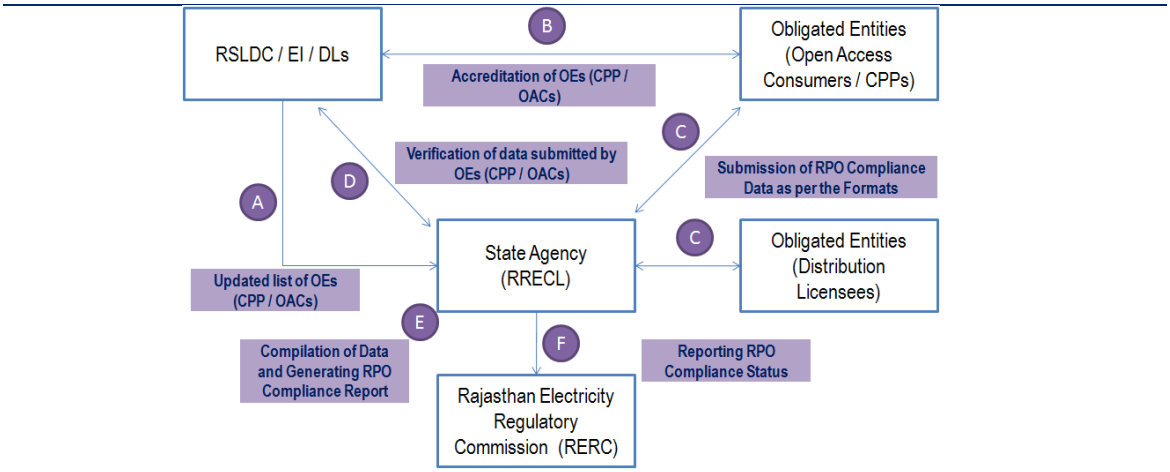
| Sr. No. | Identified Issues | Possible Solution |
|---|---|---|
| | There should be standard formats for data submission by DISCOMs/EI/OAC/CPPs to RRECL and from RRECL to RERC for RPO compliance data submission. The same will ensure effective data flow between each entity involved. | design quarterly basis data collection formats. |
| 6 | **Standard Methodology for Energy Accounting for Computing RPO Compliance of OEs:** For CPP/OA consumers other than those having in-situ captive power plants, the base energy to be considered for RPO compliance can be computed either based on the net energy or based on the gross energy at the generation point after accounting for the heeling/ transmission losses incurred during the wheeling of power from the source of generation. | Gross energy consumption from own generation from CPP unit and procured via open access is to be taken into consideration in formats designed for data collection. |
| 7 | **Lack of Check on Double Accounting of RPO Compliance:** No check exists to verify that RPO compliance by CPP/OA is not double counted towards RPO compliance of the host distribution licensee. | This issue has already been taken care while designing the data collection formats which provides due certification from concerned DISCOMs while submitting data to RRECL. DISCOMs ensure that such duplication is avoided during reporting of RPO compliance of DISCOMs. Accreditation of OEs and coding of RE generation facilities/their transactions will be necessary to avoid duplication in the credit of RE energy towards RPO compliance accounting. Standardization of data collection formats can take care of effective data flow between the entities involved. |
| 8 | Lack of streamlined RPO related data flow between OEs and RRECL. | RRECL may consider the option of designing a Web portal based data submission system to enable OEs and other supporting agencies (DISCOMs/RSLDC and EI) to make periodic submissions regarding RPO compliance. |
| 9 | Lack of awareness among OEs. | RRECL may publish RPO information manual and provide copies to all concerned offices and upload it on its official website for wider dissemination. |
| 10 | Issue of eligibility of fossil fuel-based cogeneration for RPO compliance. | Be guided by relevant RERC regulations/orders. |

## 4.3 FLOW OF INFORMATION FOR RPO COMPLIANCE MONITORING AND REPORTING

For effective RPO compliance monitoring and reporting, it is important to ensure smooth flow of data among various stakeholders. All the entities involved in the process should be aware

of their roles and responsibilities. Figure 4-1 explains the proposed framework for data sharing and RPO compliance monitoring in the state.

**Figure 4-1: Proposed RPO Compliance Monitoring and Reporting Framework**




**Step A: Updated List of OEs:** RRECL will collect the updated list of OEs from EI (captive power plants), SLDC and distribution licensees (OA consumers). The EI and SLDC/DL will also send the quarterly updates in the list of OEs.

**Step B: Accreditation of OEs:** All OEs (except distribution licensees) will be accredited with the EI and SLDC. OEs will be provided an accreditation number for creating a systematic database and ease of identification of OEs for RPO compliance monitoring. EI/SLDC will update RRECL with new accreditation on quarterly basis.

**Step C: Submission of RPO compliance data:** RRECL will share the standard data collection formats with all OEs. The OEs (including the distribution licensees) will provide the formats duly filled with their quarterly RPO compliance status. The data should be submitted to RRECL within three weeks (21 days) after completion of the quarter.

**Step D: Verification of Data:** RRECL will send the data to EI/SLDC/DLs for verification of RPO compliance related data (generation and self-consumption by CPPs, purchase of power by OA consumer, purchase of RE power, etc.) submitted by the CPPs and OA consumers. The EI/ SLDC/DLs will submit the verification report within two weeks (14 days).

**Step E: RPO Compliance Data and Report Compilation:** RPO-CMR cell in RRECL will compile all the data and prepare a report on RPO compliance of all the OEs within one week (seven days) from the receipt of verification report from SLDC/DLs.

**Step F: Quarterly Reporting to RERC:** RRECL will submit the quarterly RPO compliance report to RERC clearly mentioning the entities which are non-compliant of RPO regulations in the state.

The proposed framework should be deliberated upon by the regulatory and on-field experts of RRECL, RERC, utilities and SLDC. Finally, RERC will have to approve the framework for RPO compliance monitoring and reporting in the state keeping in mind the interest of all the stakeholders and overall interest of promotion of renewable energy projects in the state.

# 5 WAY FORWARD

## 5.1 FORMATION OF A STATE LEVEL COMMITTEE FOR FINALIZATION OF RPO COMPLIANCE MONITORING FRAMEWORK

The RPO-CMR framework development and implementation process will require continuous inputs from various state agencies. It is, therefore, highly recommended to establish a state level working group to ensure that the requisite information regarding RPO compliance by all OEs is authentic and verified, and is readily available to the implementing agency i.e., RRECL. A working group with representatives from all related stakeholders (viz. SLDC, State Transmission Utility [STU], DISCOMs, Chief Electrical Inspector [CEI] and SERC) will facilitate the development and implementation of the RPO-CMR framework. The working group should consist of the following representatives:

1. Director (Planning) STU, RRVPN (Rajasthan Rajya Vidyut Prasaran Nigam Ltd.) – Chairman.
2. Chief Engineer from SLDC.
3. Director (Technical) or Representative(s) from RERC.
4. Chief Engineer (Commercial) of JVVNL.
5. Chief Engineer (Commercial) of JdVVNL.
6. Chief Engineer (Commercial) of AVVNL.
7. Chief Electrical Inspector.
8. Director (Technical), RRECL - Member Convener.
9. Representative from the PACE-D TA Program as a Consultant.

The working group will work under the guidance of Department of Energy, Government of Rajasthan and deliberate on the modalities of smooth data flow among various stakeholders. RRECL will provide administrative secretarial support to the working group. It will maintain minutes of working group meetings, and coordinate and report the developments related to the RPO-CMR framework to all stakeholders.

***Need for Constitution of State Level Coordination Forum/Working Group:***
*A need for constitution of state level co-ordination forum/working group is well recognized. However, two options for guiding this implementation effort exist, namely, (a) under aegis of Department of Energy, Government of Rajasthan, or (b) under aegis of SERC (similar to Maharashtra Working Group by MERC). It was preferred that enforcement of RPO targets are to be taken up by the State Commission. It will be preferred that the compliance monitoring framework is also undertaken under aegis of the State Commission. However, the same may be left at the discretion of the state to decide as appropriate.*

## 5.2 NEED FOR WEB PORTAL FOR RPO MONITORING AND REPORTING

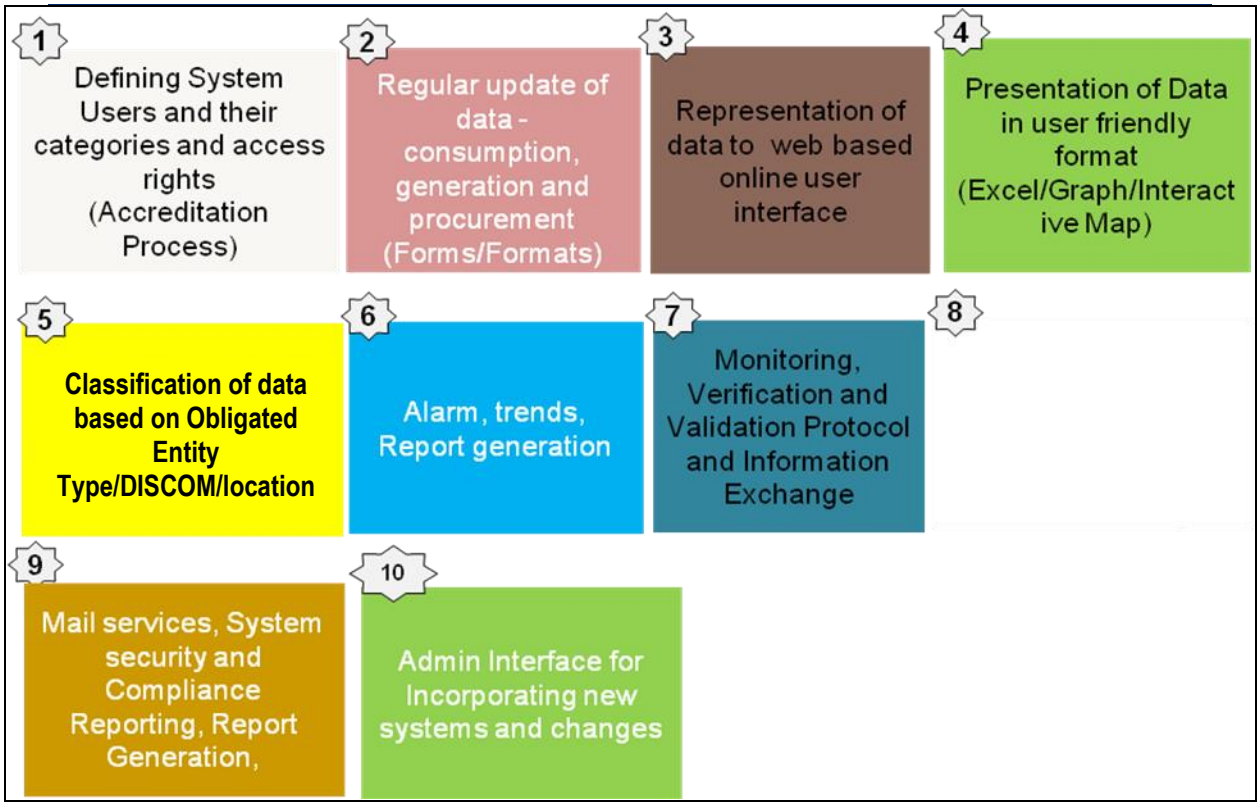
After the basic framework for RPO compliance monitoring is put in place, RRECL may evaluate the possibility for development of a Web portal for RPO compliance mechanism. It will facilitate in compilation of RPO compliance related data and reports of OEs under the RPO framework. The Web portal will facilitate distribution licensees, EI and SLDC in identifying and certifying the entities as OEs. The Web portal will also help in streamlining the increasing number of entities on a day to day basis and thereby developing a systematic

database of information on RPO of OEs in the state. It is envisaged that RRECL shall separately engage IT expert/tools/hardware/software for this activity, as may be necessary. The PACE-TA Program will assist RRECL in drawing up the functional specifications of the portal and provide support in engaging/sourcing IT expert and guiding through the process.

## 5.3 IMPLEMENTATION SUPPORT FOR THE DEVELOPMENT OF WEB TOOL

As part of the next step for support in Web tool development, it is envisaged that the Program will assist RRECL in developing the functional specifications of the portal and also provide support in the development of the Web tool.

**Figure 5-1: Potential Functionalities for Web Tool Design and Development**




The Program will further support RRECL to:

1. Develop data formats for collection and filling information of OE.
2. Provide support in coordination of working group meetings on RPO compliance.
3. Design the layout and provide assistance in development of Web tool.
4. Design and develop Web tool and provide support in pilot testing.
5. Assist in management and handling of data for operationalizing the Web tool.
6. Organize training programs on Web tool for capacity building of RRECL staff.
7. Provide overall project management/handholding support for implementation of this activity.

# 6 ANNEXURE A: STANDARD FORMS AND FORMATS FOR RPO COMPLIANCE DATA COLLECTION[3]

**Format 1: Gross Energy Consumption (DISCOM)**

| **GROSS ENERGY CONSUMPTION (YEAR ____ to ____)** | | | | |
|---|---|---|---|---|
| | **Reporting Quarter: ____ to _____** | | | |
| | **Utility: DISCOM** | | | |
| **1** | **GROSS CONSUMPTION** | | **Quantum (MUs)** | **Remarks** |
| **O** | **Own Generation** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (1)** | | | |
| **P** | **Purchase From Other Generating Company/Intermediaries** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | …. | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **S** | **Sale to Other Licensee/Intermediaries** | | | |
| | Licensee 1 | | | |
| | Licensee 2 | | | |
| | … | | | |
| | Intermediaries | | | |
| | **Subtotal (3)** | | | |
| | **Total Gross Energy Consumption for the Quarter (O + P - S)** | | | |
| | | | | |
| **2** | **RPO Obligation (____% of GEC)** | | | |
| **Declaration:** We hereby declare that the gross energy consumption and RE procurement data submitted above does not include the gross energy consumption and RE procurement data of CPP/OA consumers on our network. | | | | |

[3] Forms/Formats for RPO Compliance Data Collection Have Been Prepared in Line With RERC (Renewable Energy Certificate and Renewable Purchase Obligation Compliance Framework) Regulations, 2010.

**Format 2: RE Procurement (Solar) (DISCOM)**

| | | | | |
|---|---|---|---|---|
| **RENEWABLE ENERGY PROCUREMENT (YEAR ____ to ____)** | | | | |
| **(A - Solar)** | | | | |
| **Reporting Quarter: ____ to ____** | | | | |
| **Solar Sources Detail** | | | | |
| **Month** | | | | |
| **Authorized Person Name: DISCOM** | | | | |
| **1** | **Own Generation** | | **Quantum (MUs)** | **Remarks** |
| | RE 1 | | | |
| | RE 2 | | | |
| | … | | | |
| | RE ... N | | | |
| | **Subtotal (1)** | | | |
| **2** | **Purchase From Other RE Sources/Licensee** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **3** | **Purchase Through Solar REC** | | | |
| | **Subtotal (3)** | | | |
| **4** | **RE Sold to Other Person** | | | |
| | Party - 1 | | | |
| | Party - 2 | | | |
| | …. | | | |
| | **Subtotal (4)** | | | |
| | **Total Procurement (1) + (2) + (3) - (4)** | | | |
| **Declaration:** We hereby declare that the gross energy consumption and RE procurement data submitted above does not include the gross energy consumption and RE procurement data of CPP/OA consumers on our network. | | | | |

**Format 3: RE Procurement (Wind) (DISCOM)**

| | | | | |
|---|---|---|---|---|
| **RENEWABLE ENERGY PROCUREMENT (YEAR ____ to ____)** | | | | |
| **B - Non Solar - Wind** | | | | |
| **Reporting Quarter: ____ to ____** | | | | |
| **Wind Power Sources Detail** | | | | |
| **Month:** | | | | |
| **Eligible Person Name: DISCOM** | | | | |
| **1** | **Own Generation** | | **Quantum (MUs)** | **Remarks** |
| | RE 1 | | | |
| | RE 2 | | | |
| | … | | | |
| | RE ... N | | | |
| | **Subtotal (1)** | | | |
| **2** | **Purchase From Other RE Sources (Wind)/Licensee** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **3** | **Purchase Through Non-Solar REC** | | | |
| | **Subtotal (3)** | | | |
| **4** | **RE Sold to Other Person** | | | |
| | Party - 1 | | | |
| | Party - 2 | | | |
| | … | | | |
| | **Subtotal (4)** | | | |
| | **Total Procurement (1) + (2) + (3) - (4)** | | | |
| **Declaration:** We hereby declare that the gross energy consumption and RE procurement data submitted above does not include the gross energy consumption and RE procurement data of CPP/OA consumers on our network. | | | | |

**Format 4: RE Procurement (Biomass) (DISCOM)**

| | | | | |
|---|---|---|---|---|
| **RENEWABLE ENERGY PROCUREMENT (YEAR ____ to ____)** | | | | |
| **B - Non Solar - Biomass** | | | | |
| **Reporting Quarter: ____ to ____** | | | | |
| **Biomass Power Sources Detail** | | | | |
| **Month** | | | | |
| **Authorized Person Name: DISCOM** | | | | |
| **1** | **Own Generation (Biomass)** | | **Quantum (MUs)** | **Remarks** |
| | RE 1 | | | |
| | RE 2 | | | |
| | … | | | |
| | RE ... N | | | |
| | **Subtotal (1)** | | | |
| **2** | **Purchase From Other Biomass Power Sources/Licensee** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **3** | **Purchase Through Non-Solar REC** | | | |
| | **Subtotal (3)** | | | |
| **4** | **RE Sold to Other Person** | | | |
| | Party - 1 | | | |
| | Party - 2 | | | |
| | … | | | |
| | **Subtotal (4)** | | | |
| | **Total Procurement (1) + (2) + (3) - (4)** | | | |
| **Declaration:** We hereby declare that the gross energy consumption and RE procurement data submitted above does not include the gross energy consumption and RE procurement data of CPP/OA consumers on our network. | | | | |

**Format 5: RPO Settlement Account (Solar) (DISCOM)**

| **RPO Settlement Account (Yearly) - YEAR ____** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **A - Solar** | | | | | | | | | | | |
| **Authorized Person Name– DISCOM** | | | | | | | | | | | |
| **Gross Energy Consumption** | | **RPO Percentage Obligation (____ %)** | **RPO Percentage Up to Previous Month** | **RPO Percentage Cumulative Up to the Month (1)** | **RE Purchase for the Month** | | **RE purchase Up to Previous Month** | | **RE Cumulative Up to the Month (2)** | | **Short If Any (1 - 2)** |
| **MUs** | | **MUs** | **MUs** | **MUs** | **MUs** | | **MUs** | | **MUs** | | **MUs** |
| **Fiscal Year (_____)** | | | | | **Pref Tariff** | **REC** | **Pref Tariff** | **REC** | **Pref Tariff** | **REC** | |
| | | | | | | | | | | | |
| April | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| July | | | | | | | | | | | |
| August | | | | | | | | | | | |
| September | | | | | | | | | | | |
| October | | | | | | | | | | | |
| November | | | | | | | | | | | |
| December | | | | | | | | | | | |
| January | | | | | | | | | | | |
| February | | | | | | | | | | | |
| March | | | | | | | | | | | |
| **Total** | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

**Format 6: RPO Settlement Account (Non Solar - Wind) (DISCOM)**

| **RPO Settlement Account (Yearly) - YEAR ____** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **B – Non Solar - Wind** | | | | | | | | | | | |
| **Authorized Person Name – DISCOM** | | | | | | | | | | | |
| **Gross Energy Consumption** | | **RPO Percentage Obligation (___ %)** | **RPO Percentage Up to Previous Month** | **RPO Percentage Cumulative Up to the Month (1)** | **RE Purchase for the Month** | | **RE Purchase Up to Previous Month** | | **RE Cumulative Up to the Month (2)** | | **Short If Any (1-2)** |
| **MUs** | | **MUs** | **MUs** | **MUs** | **MUs** | | **MUs** | | **MUs** | | **MUs** |
| **Fiscal Year (_____)** | | | | | **Pref. Tariff** | **REC** | **Pref. Tariff** | **REC** | **Pref. Tariff** | **REC** | |
| | | | | | | | | | | | |
| April | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| July | | | | | | | | | | | |
| August | | | | | | | | | | | |
| September | | | | | | | | | | | |
| October | | | | | | | | | | | |
| November | | | | | | | | | | | |
| December | | | | | | | | | | | |
| January | | | | | | | | | | | |
| February | | | | | | | | | | | |
| March | | | | | | | | | | | |
| **Total** | | | | | | | | | | | |

**Format 7: RPO Settlement Account (Non Solar - Biomass) (DISCOM)**

| **RPO Settlement Account (Yearly) – YEAR ____** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **C – Non Solar - Biomass** | | | | | | | | | | | |
| **Authorized Person Name– DISCOM** | | | | | | | | | | | |
| **Gross Energy Consumption** | | **RPO Percentage Obligation (____ %)** | **RPO Percentage Up to Previous Month** | **RPO Percentage Cumulative Up to the Month (1)** | **RE Purchase for the Month** | | **RE Purchase Up to Previous Month** | | **RE Cumulative Up to the Month (2)** | | **Short If Any (1-2)** |
| **MUs** | | **MUs** | **MUs** | **MUs** | **MUs** | | **MUs** | | **MUs** | | **MUs** |
| **Fiscal Year (_____)** | | | | | **Pref. Tariff** | **REC** | **Pref. Tariff** | **REC** | **Pref. Tariff** | **REC** | |
| | | | | | | | | | | | |
| April | | | | | | | | | | | |
| May | | | | | | | | | | | |
| June | | | | | | | | | | | |
| July | | | | | | | | | | | |
| August | | | | | | | | | | | |
| September | | | | | | | | | | | |
| October | | | | | | | | | | | |
| November | | | | | | | | | | | |
| December | | | | | | | | | | | |
| January | | | | | | | | | | | |
| February | | | | | | | | | | | |
| March | | | | | | | | | | | |
| **Total** | | | | | | | | | | | |

**Format 8: Gross Electricity Consumption (CPPs)**

| **GROSS ENERGY CONSUMPTION (YEAR ____ to ____)** | | | | |
|---|---|---|---|---|
| | **Reporting Quarter: ____ to ____** | | | |
| | **Obligated Entity: Captive Power Plants** | | | |
| **1** | **GROSS CONSUMPTION** | | **Quantum (MUs)** | **Remarks** |
| **O** | **Own Generation (In Case of Captive Users)** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Sub Total (1)** | | | |
| **P** | **Procurement Through Group Captive/Intermediaries** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Sub Total (2)** | | | |
| **S** | **Sale to Other Licensee/Intermediaries** | | | |
| | Licensee 1 | | | |
| | Licensee 2 | | | |
| | … | | | |
| | Intermediaries | | | |
| | **Sub Total (3)** | | | |
| | **Total GEC for the Quarter (O) + (P) - (S)** | | | |
| **2** | **RPO Obligation (____% of GEC)** | | | |

**Format 9: RE Procurement (CPPs)**

| | | | | |
|---|---|---|---|---|
| **RENEWABLE ENERGY PROCUREMENT (YEAR ____ to ____)** | | | | |
| **Renewable Energy** | | | | |
| **Reporting Quarter: ____ to ____** | | | | |
| **RE Sources Detail** | | | | |
| **Month** | | | | |
| **Eligible Person Name: Captive Users/Open Access Consumers** | | | | |
| **1** | **Own Generation** | | **Quantum (MUs)** | **Remarks** |
| | RE 1 | | | |
| | RE 2 | | | |
| | … | | | |
| | RE ... N | | | |
| | **Subtotal (1)** | | | |
| **2** | **Purchase From Other RE Sources/Licensee** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **3** | **Purchase Through REC** | | | |
| | **Sub Total (3)** | | | |
| **4** | **RE Sold to Other Person** | | | |
| | Party - 1 | | | |
| | Party - 2 | | | |
| | … | | | |
| | **Subtotal (4)** | | | |
| | **Total Procurement (1) + (2) + (3) - (4)** | | | |

**Format 10: Gross Electricity Consumption through OA Consumers**

| **GROSS ELECTRICITY CONSUMPTION (YEAR ____ to ____)** | | | | |
|---|---|---|---|---|
| | **Reporting Quarter: ____ to ____** | | | |
| | **Utility: Open Access Consumers** | | | |
| **1** | **GROSS CONSUMPTION** | | **Quantum (MUs)** | **Remarks** |
| **O** | **Own Generation (Consumption From Own Generation)** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (1)** | | | |
| **P** | **Purchase From Other Generating Company/Intermediaries (In Case of Open Access Consumers)** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **S** | **Sale to Other Licensee/Intermediaries** | | | |
| | Licensee 1 | | | |
| | Licensee 2 | | | |
| | … | | | |
| | Intermediaries | | | |
| | **Subtotal (3)** | | | |
| | **Total GEC for the Quarter (O) + (P) - (S)** | | | |
| **2** | **RPO Obligation (____% of GEC)** | | | |

**Format 11: RE Procurement (OA Consumers)**

| | | | | |
|---|---|---|---|---|
| **RENEWABLE ENERGY PROCUREMENT (YEAR ____ to ____)** | | | | |
| **Renewable Energy** | | | | |
| **Reporting Quarter: ____ to ____** | | | | |
| **RE Sources Detail** | | | | |
| **Month** | | | | |
| **Authorized Person Name: Captive Users/Open Access Consumers** | | | | |
| **1** | **Own Generation** | | **Quantum (MUs)** | **Remarks** |
| | RE 1 | | | |
| | RE 2 | | | |
| | … | | | |
| | RE ... N | | | |
| | **Subtotal (1)** | | | |
| **2** | **Purchase From Other RE Sources/Licensee** | | | |
| | Source 1 | | | |
| | Source 2 | | | |
| | … | | | |
| | … | | | |
| | Source N | | | |
| | **Subtotal (2)** | | | |
| **3** | **Purchase Through REC** | | | |
| | **Subtotal (3)** | | | |
| **4** | **RE Sold to Other Person** | | | |
| | Party - 1 | | | |
| | Party - 2 | | | |
| | … | | | |
| | **Subtotal (4)** | | | |
| | **Total Procurement (1) + (2) + (3) - (4)** | | | |

**Format 12: RPO Settlement Account (CPP/OA Consumers)**

| Year | Total Energy Consumption (From Captive Source in Case of Captive User)or(From Open Access Source in Case of OA Consumer) | RPO | | Total Energy to Be Procured as per RPO E = (A) + (C) | Total RE Procurement F = (B + D) | Shortfall If Any (E) - (F) |
|---|---|---|---|---|---|---|
| | | RPO Target for Respective Years (C) | Energy Actually Procured Against Target (D) | | | |
| | MU | MU | MU | MU | MU | MU |
| | | | | | | |
| April | | | | | | |
| May | | | | | | |
| June | | | | | | |
| July | | | | | | |
| August | | | | | | |
| September | | | | | | |
| October | | | | | | |
| November | | | | | | |
| December | | | | | | |
| January | | | | | | |
| February | | | | | | |
| March | | | | | | |
| **Total** | | | | | | |

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