

## MINUTES OF NINTHMEETING OF “TECHNICAL COMMITTEE FOR IMPLEMENTATION OF FRAMEWORK ON RENEWABLES AT THE STATE LEVEL”

Venue	:	Upper Ground Floor, Conference Hall, CERC
Date	:	29-12-2016
List of Participants	:	At <b>Annexure - I (Enclosed)</b>

1. The Ninth meeting of Technical Committee on Implementation of Framework for Renewables at the State level was held under the Chairmanship of Shri A. S Bakshi, Member, CERC on 29<sup>th</sup>December 2016.
2. Dr. S.K. Chatterjee, Jt Chief (RA), CERC, welcomed all the participants. He briefed the Committee on the agenda items which included ‘Preparedness of RPO Monitoring Web-tool’ and ‘Update on SAMAST implementation in Andhra Pradesh.’

### Discussion

#### I. **Presentation by IDAM and USAID on Development of Generic Renewable Purchase Obligation Compliance Web-tool**

1. Shri Balwant Joshi from Idam Infra presented the Generic Web-tool for RPO compliance (**Annexure - II**). Shri Joshi highlighted comparison of 6 States, namely, Maharashtra, Gujarat, Rajasthan, Tamil Nadu, Karnataka and Andhra Pradesh, on their RPO compliance.
2. Various challenges regarding RPO compliance such as ensuring that targets are met, Non-compliance to be brought to notice, absence of monitoring mechanism for Obligated Entities (OE) other than DISCOMS etc., were underlined. The need for an innovative, process-driven and technology based solution to address these challenges, was reiterated.
3. Further, the following issues were discussed:-
  - a) **RPO as Percentage of Consumption or Input Energy**-The practices followed in States for computation of RPO percentage for OE were discussed. It emerged that RPO is computed as a percentage of sales, in some States while in others it is based on percentage of input energy. It transpired that in so far as DISCOMS are concerned, even if ‘sales’ are used as reference for RPO computation, the energy at sales level will have to be grossed up by T&D losses to arrive at the purchase of RE by DISCOMS. This is the same as input energy. As such, it would be desirable to compute RPO for DISCOMS as a percentage of energy input, uniformly across States.

Shri S.K Soonee, Advisor POSOCO, opined that for OA consumers RPO percentage should be based on its schedule. However, it was felt that all OA purchases may not

necessarily be based on schedule. After discussion, it was agreed that for OA and CPP consumers, RPO should be computed as a percentage of metered consumption.

- b) Rooftop Solar Projects as RPO Compliance** - Shri Deepak Lad, Member MERC, raised the point of crediting the generation (Gross) from Rooftop Solar Projects to the DISCOMs for the purpose of their Solar RPO, to which Dr. S.K Chatterjee, Jt Chief (RA), CERC confirmed that FOR model guidelines have already recommended this dispensation. After discussion, it was agreed that the FOR Secretariat could write to MoP to suitably incorporate this in Tariff Policy, to ensure its uniform application across the country.
- c) Non-uniformity among States in eligibility of Obligated Entities (OEs)** - In Maharashtra, OEs are DISCOMs, OA consumers with Contract Demand more than 5MVA and CPP having installed capacity of 5MW or above whereas in Rajasthan and Andhra Pradesh, all DISCOMs and OA consumers and CPPs with installed capacity of 1MW and above are termed as OE. Difficulty in monitoring was cited as the reason for such provisions. JC(RA), CERC stated that with the RPO compliance Web-tool, the monitoring would become easy and all DISCOMs, OA and CPP consumers irrespective of any lever of contract demand / Installed capacity should be recognised as OEs as per the spirit of the Act. The members endorsed the suggestion.

In case of Karnataka, there are different RPO targets for different DISCOMs. The need for uniformity of RPO target in terms of percentage of input energy was highlighted.

- d) RPO Implementing and Monitoring Agencies** - For different States, there are different RPO implementing agencies. For example, for Maharashtra and Gujarat it is MEDA and GEDA respectively and for Tamil Nadu and Andhra Pradesh, it is TANTRANSCO and APTRANSCO respectively.

In Maharashtra, a Grid Coordination Committee (GCC) has been constituted for monitoring RPO compliance. It was felt that the States could choose either of the options-of having a Committee on lines of Grid Coordination Committee (GCC) or an SNA for implementing and compliance monitoring of RPO in States. It was decided that the selected agency / committee should submit a quarterly report on compliance status to the State Commission.

- e) Data Verification by OE** - The issue of verification of data submitted by the OE was discussed. It was informed that in Gujarat, the Electrical Inspectors are verifying the data submitted by CPPs.

It was suggested that Electrical Inspectors could verify the data for CPPs and SLDCs could verify for other OEs. Further, it was decided that the consultant will develop a standard format for data verification as part of the web tool.

- f) Regulatory Intervention** – The consultant proposed Regulatory interventions by way of delegating powers to SNA to levy penalty on OEs under Section 142 (Punishment for non-compliance of directions by Appropriate Commission) of Electricity Act 2003 if they fail to submit the data. However, members felt that this would not be legally

feasible. The process under Section 142 can be exercised only by the Commission after following due process of law and natural justice.

- g) **Web-Tool Hosting** – Discussions were held on the ownership of hosting the web-tool. Shri Soonee argued that it is important to identify the required resources and skill sets like for this activity to which the consultant clarified that they would provide the detailed requirement in next meeting.

Further, it was decided to define the required regulatory changes in the RPO regulation of Rajasthan and Gujarat so that by April 2017, the web-tool is ready for these 2 States ( which can act as a role model for other States to follow).

The Consultant confirmed that they could give Live demo for Rajasthan after 10 Jan 2017.

- h) **IT Capabilities and Credentials** - It was suggested that the consultant should ensure the robustness of the IT tool being developed. For this, they should clearly articulate their IT capabilities and credentials in terms of security audit and dispute/error free web-tool.

## **II. Presentation on Draft DPR on Implementation of SAMAST Report for Andhra Pradesh**

4. Presentation on Draft DPR on implementation of SAMAST report for Andhra Pradesh was made by the representatives of APTRANSCO.

5. APTRANSCO informed that the Draft DPR has been prepared as per the recommendations made in the SAMAST report and presented Budgetary Cost Estimates under different heads as shown below:

<b>S. No.</b>	<b>Item</b>	<b>Cost in INR Cr.</b>
1	Hardware Component – I & Communication (Including ABT Meters, CTs, PTs, Calibration Meters, AMR Instruments Facility, Infrastructure, Installation and Testing)	162.35
2	Hardware Component – II	1.91
3	Software Component	5.11
4	Communication Component	3.53
5	Infrastructure Dev. Component	3.43
6	Training & Capacity Building	1.17
	<b>Total</b>	<b>177.5</b>

A total budgetary cost of INR 177.5 Cr has been estimated of which about INR 150 Cr. is for replacement of CT/PT resulting from shifting of Substation metering points from LV side to HV side as recommended in SAMAST report.

However, APTRANSCO confirmed that they are already metering at LV side of the transformer and have installed 15 minutes time block wise meters along with CT/PT of required accuracy class.

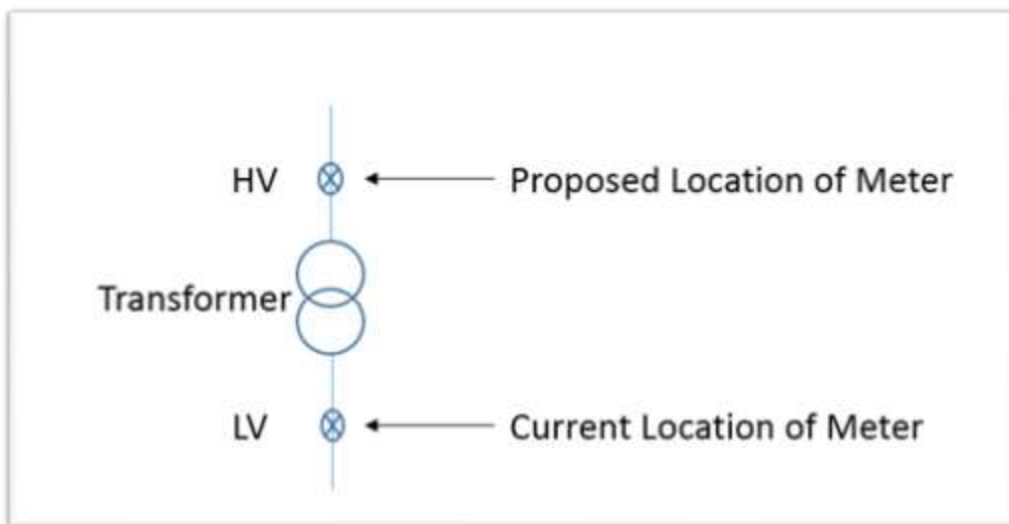
On the issue of location of meters, Member (Technical), MERC stated that in most of the States the losses of transformers are booked to transmission utilities.

The representatives of APTRANSCO clarified that in AP also, transformer losses are currently booked to transmission utilities. However, once the meter is shifted to HV side, that too incurring additional cost of Rs. 150 Cr., the transformer losses would be booked to distribution licensee.

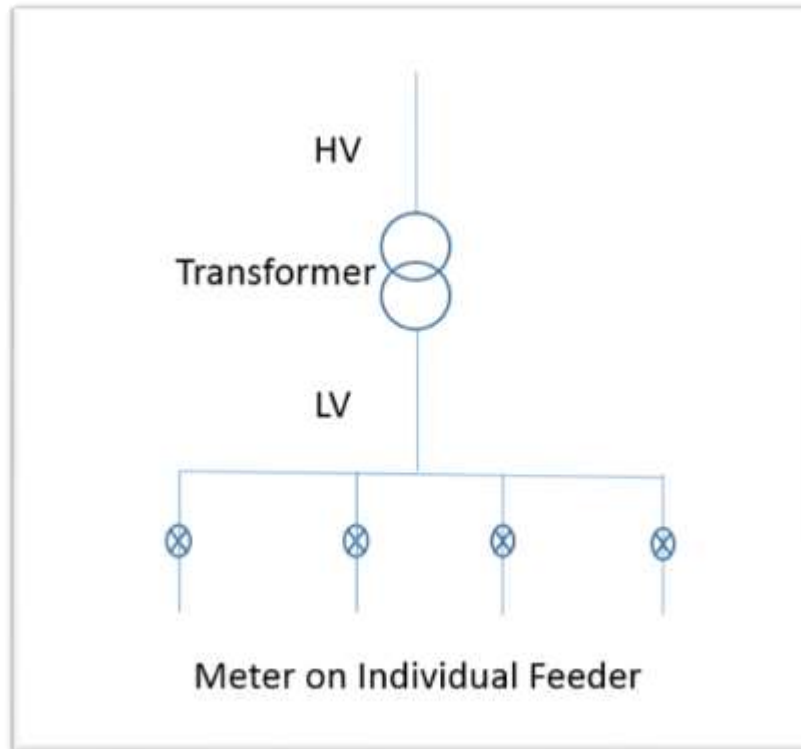
Smt. Shilpa Agarwal, Dy. Chief (Engg.) CERC, enquired about the need for shifting meter to the HV side of the transformer to which ShriSoonee clarified that metering is preferable on HV side of the transformer as there will be less metering points. He stated that in case where there are multiple LV feeders and if metering is done on each LV feeder, then the number of points which are to be metered will increase substantially and will be difficult to monitor. To this, the representatives from APTRANSCO clarified that in their case the number of metering points remains the same as that of metering on HV side as they are metering on LV side of the same transformer and not on individual feeders.

The same has been represented below:

### AP System



## Other Option



The members of the Committee discussed this issue and it was agreed that shifting of measuring points from LV to HV side is not required in the instant case and hence the replacement of CT/PT is also not required.

It was also decided that a clarification will be issued on the SAMAST report wherein both the options will be given to States - either to follow the method being practiced by Andhra Pradesh or shifting measuring points from LV side to HV side.

It was also agreed that CEA metering standards for procurement and installation of any new meters/equipment at the interface points may be followed.

6. As the current DPR of AP does not include any future RE plans, suggestions were made to factor in the STU's expansion plans and the future addition of RE generation.
7. The following way forward was suggested in the context of the DPR:-
  - a) Based on the above discussion, the DPR should be revised by APTRANSCO. The revised estimates for Hardware (Including ABT Meters, Calibration Meters, AMR Instrumets Facility, Infrastructure, Installation and Testing), Software, Communication Component, Infrastructure Development Component, Training and Capacity Building Component would be around Rs.28 crores.
  - b) APTRANSCO should write to PSDF for funding and parallely write to APERC for its approval.

- c) APTRANSCO should simultaneously initiate the tendering process for procurement of equipment.

Representatives from AP TRANSCO agreed that the above activities will be completed by 15<sup>th</sup> January, 2017.

- 8. It was suggested that APERC should write to State Government/SLDC to immediately fulfill the man power requirement for better efficiency and management of SAMAST implementation.

### **III. Impact of RE integration**

Dr. Chatterjee informed that FOR in its meeting held on 16<sup>th</sup> December, 2016 at Raipur referred the matter raised by WBERC Chairperson on impact of RE integration to the Technical Committee for detailed examination. It was decided that this may be discussed in the next meeting. It was also agreed that the balancing and deviation settlement mechanism in the State of West Bengal, including the manner of utilization Purulia Pump Storage for balancing, be discussed in the meeting.

### **Decisions**

- a) **RPO as Percentage of Consumption or Input Energy** – For DISCOMS, it would be desirable to compute RPO as a percentage of energy input, uniformly across States.

For for OA and CPP consumers, RPO should be computed as a percentage of metered consumption

- b) **Rooftop Solar Projects as RPO Compliance** - FOR Secretariat could write to MoP to suitably incorporate the provision of crediting generation (Gross) from Rooftop Solar Projects to the DISCOMs for the purpose of their Solar RPO in Tariff Policy, to ensure its uniform application across the country.
- c) **RPO Implementing and Monitoring Agencies** - States could choose either of the options - of a committee on lines of having Grid Coordination Committee (GCC) of Maharashtra or an SNA for implementing and compliance monitoring of RPO in States. The selected agency / committee should submit a quarterly report on compliance status to the State Commission.
- d) **Data Verification by OE** - It was suggested that Electrical Inspectors can verify the data for CPPs and SLDCs can verify for other OEs. The consultant will develop a standard format for data verification as part of the web tool.
- e) **Web-Tool Hosting** - To define the required regulatory changes in the RPO regulations of States so that by April 2017, the web-tool is ready for at least 2 States viz., Rajasthan and Gujarat (which can act as a model for other States to follow)
- f) **SAMAST Implementation** - A clarification will be issued on the SAMAST report wherein both the options will be given to States - either to follow the method being

practiced by Andhra Pradesh (metering on LV side of the transformer and not on individual feeders) or shifting measuring points from LV side to HV side.

- g) The issue of Impact of RE Integration' referred by the FOR would be taken up in the next meeting, along with the issue of balancing and deviation settlement mechanism in the State of West Bengal including the manner of utilization of Purulia Pump Storage for balancing.

9. It was decided that the next Technical Committee meeting will be held on **20<sup>th</sup> January 2017 at Kolkata in West Bengal.**

The meeting ended with a vote of thanks to the Chair.

**LIST OF PARTICIPANTS ATTENDED THE NINTH MEETING OF THE TECHNICAL COMMITTEE FOR “IMPLEMENTATION OF FRAMEWORK ON RENEWABLES AT THE STATE LEVEL” HELD ON 29.12.2016 AT THE CERC, NEW DELHI**

1	Shri. A. S.Bakshi, Member	CERC
2	ShriD.B.ManiwalRaju, Member	KERC
3	Shri P. Rama Mohan, Member	APERC
4	Shri. Deepak Lad, Member	MERC
5	ShriA.B.Bajpai, Member	MPERC
6	Shri KVS Baba, CEO	POSOCO
7	Shri. S. K.Soonee, Advisor	POSOCO
8	Shri S.C. Shrivastava, Chief (Engg.)	CERC
9	DrSushanta K. Chatterjee, JC(RA)	CERC
10	Shri A.K Sil, Jt Advisor (Engg.)	WBERC
11	ShriS.R.Pandey, Legal Advisor	GERC
12	Smt.ShilpaAgarwal, DC(Engg.)	CERC
13	Shri AKV Bhaskar	APTRANSCO
14	V. Sreedhar Reddy	APTRANSCO
15	Smt.Snekalatha A.K.	TERI
16	Shri A.K Saxena	TERI
17	ShriAjitPandit	IDAM INFRA



18	ShriBalawant Joshi	IDAM INFRA
19	Smt. Ruchi Gupta	IDAM INFRA
20	ShriN.Y.DineshBabu, Consultant	USAID PACE-D Program
21	ShriSiddharthArora	CERC
22	ShriAnkit Gupta	CERC
23	ShriTanayTarany	CERC



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**MINISTRY OF NEW  
AND RENEWABLE ENERGY**

# **PARTNERSHIP TO ADVANCE CLEAN ENERGY-DEPLOYMENT TECHNICAL ASSISTANCE PROGRAM**

Development of Generic Renewable Purchase Obligation Compliance Web-tool

*Presented to: Forum of Regulators – 9<sup>th</sup> Technical Committee Meeting*

*Date: 29<sup>th</sup> December, 2016*

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# Need for RPO Compliance Monitoring Framework



**29 States/UTs have specified Obligation for Purchase of Renewable Energy by Obligated Entities**

- RPO compliance monitoring is crucial to ensure:
  - RPO targets are met
  - Non-compliance is brought to the notice of regulators
- RPO compliance monitoring for DISCOM through Annual Performance Review, but no such monitoring mechanism for other obligated entities.
- Suo-Motu proceedings in few states to review the RPO compliance status by OA and captive consumers.
- RPO compliance review process is undertaken with significant time lag.

**Need for an innovative, process-driven and technology-based solution to address these challenges**

# RPO Regulations – Comparing Key States

S. No	Parameters	Maharashtra	Gujarat	Rajasthan	Tamil Nadu	Karnataka	AP
1.	<b>Year of Notification</b>	2010	2010	2007	2010	2011	2012
2.	<b>Amendment</b>	2016	2014	2011, 2014, 2015, 2016	2010, 2011, 2016	2011, 2012, 2015	-
3.	<b>Operating Period</b>	1 April 2016 - 31 March 2020	Not specified	Not Specified	The RPO specified for the previous year shall be continued beyond the period till any revision	Not Specified	Not Specified
4.	<b>Obligated Entities</b>	1. DISCOM 2. OA based on conventional fossil fuel (Contract Demand- 5MVA) 3. CPP based on conventional fossil fuel (Inst. Capacity- 5MW or above) *Provided CPP procuring power from grid connected fossil fuel cogeneration plants are free from applicability of RPO target	1. DISCOM 2. OA based on conventional generation 3. CPP based on conventional fossil fuel (Inst. Capacity- 5MW and above) 4. Third party sale	1. DISCOM 2. OA 3. CPP (Inst. Capacity -1MW and above)	1. DISCOM 2. OA 3. CPP *Such obligation to purchase RE shall include the purchases, if any, from RE sources already being made by	1. DISCOM 2. OA based on conventional generation (Cont. Demand- above 5 MW) 3. CPP based on conventional fossil fuel (Inst. Capacity	1. DISCOM 2. OA 3. CPP (Inst. Capacity - 1MW and above)

# RPO Regulations – Comparing Key States

S. No	Parameter	FY	Maharashtra		Gujarat		Rajasthan		Tamil Nadu		AP
5.	Implementing Agency	MEDA	MEDA		GEDA		RRECCL		TANTRANSCO		APTRANSCO
6.	RPO Targets – Same for all OE (%)		S	NS	S	NS	S	NS	S	NS	
		2016-17	1.00	10.00	1.75	8.25	2.75	8.75	2.50	9.00	RE- At least 5%, including a min. 0.25% from solar
		2017-18	2.00	10.50			4.75	9.50	5.00	9.00	
		2018-19	2.75	11.00			6.75	10.25			
		2019-20	3.50	11.50							

# RPO Regulations – Comparing Key States

S. No.	Parameter	FY	Karnataka						
6.	RPO Targets – Respective targets for DISCOMs/OA/ CPP (%)		DISCOMS				OA/ CPP		
			S	NS			S	NS	
				BESCOM/M ESCOM/CE SC	HESCOM	GESCOM			
		2016-17	0.75	11.00	7.50	5.50	0.75	5.5	
		2017-18	1.25	12.00	8.50	6.00	1.25	6.00	
		2018-19	1.75	13.00	9.50	7.00	1.75	7.00	
		2019-20	2.50	14.00	10.50	8.00	2.50	8.00	

# RPO Regulations – Comparing Key States

Parameter	Maharashtra	Gujarat	Rajasthan	Tamil Nadu	Karnataka	AP
<b>1) Collection and Compilation</b>	Develop methodology on regular basis and compile	Develop methodology on regular basis and compile	Develop methodology on regular basis and compile	Develop methodology on regular basis and compile	Develop methodology on regular basis and compile	Develop methodology on regular basis and compile
<b>2) Submission of Compliance Status to the Commission</b>	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
<b>3) Measures</b>	Suggest support measures for compliance	Suggest support measures for compliance	Suggest support measures for compliance	Suggest support measures for compliance	Suggest support measures for compliance	Suggest support measures for compliance
<b>4) Monitoring committee</b>	A Committee shall be constituted under the GCC, within 30 days of notification	No	No	No	No	No
<b>5) Charges payable to SNA by the Commission</b>	The Commission to fix the remuneration and charges	The Commission to fix the remuneration and charges	The Commission to fix the remuneration and charges	The Commission to fix the remuneration and charges	The Commission to fix the remuneration and charges	The Commission to fix the remuneration and charges
<b>6) Format <u>Slide 14</u></b>	Specified	Specified	Not Specified	Not Specified	Not Specified	Not Specified

**RPO Monitoring by SNA**



# RPO Regulations – Comparing Key States: Consequence of Default (1/2)

## Maharashtra

## Gujarat

## Rajasthan

1. In case of RPO default in any year, or not purchase the certificates, the Commission may direct the obligated entity to deposit the amount determined by the commission on the basis of shortfall into a separate fund in respect of solar and non-solar RPO

2. The fund deposited by OE (other than distribution licensee) shall be maintained by state agency or as directed by state commission

3. *RPO regulatory charges equivalent to the highest applicable preferential Tariff, or forbearance price decided by the commission*

4. The state commission may not allow all or part of the regulatory charges to be passed on the consumers

2. The Commission may empower an officer of the State Agency to procure RECs from the Power Exchange to fulfill RPO out of the amount from fund

3. The fund shall be utilized for purchase of certificates and for development of transmission and sub-transmission infrastructure for evacuation of power

4. The obligated entities shall not be authorized to use the fund without prior approval of the Commission

5. *The license of the distribution licensee shall be in breach if it fails to deposit the amount within 15 days of direction*

6. In case of any genuine difficulty in complying with RPO the Commission to carry forward the compliance requirement to the next year

2. *Amount received by the State Agency shall be paid to STU for crediting in the fund and maintained by the STU within one month from the last day of the month in which such sums are received*

3. The fund shall be utilized for purchase of certificates and for development of transmission and sub-transmission infrastructure for evacuation of power

4. The obligated entities in default shall pay the RPO charge by 30th November of the Assessment Year.

5. State Agency shall also file a petition before the Commission for penal action by 31st December of the Assessment Year.

# RPO Regulations – Comparing Key States: Consequence of Default (1/2)

## Tamil Nadu

## Andhra Pradesh

## Karnataka

In case of RPO default in any year, or not purchase the certificates, the Commission may direct the obligated entity to deposit the amount determined by the commission on the basis of shortfall into a separate fund in respect of solar and non-solar RPO

2. The fund created shall be utilized for purchase of the certificates
3. The Commission may empower an officer of the State Agency to procure RECs from the Power Exchange to fulfill RPO out of the amount from fund
4. *The distribution licensee shall be in breach of his license condition if he fails to deposit the amount within 15 days of the direction.*
5. *Liable for penalty decided by the Commission*

2. The fund created shall be utilized for purchase of the certificates or as directed by the Commission
3. The Commission may empower an officer of the State Agency to procure certificates from the Power Exchange to fulfill RPO out of the amount from fund

2. The consumer failing to meet the RPO shall purchase RECs to the extent of 110% of quantum of shortfall in meeting the RPO
3. *Liable for penalty decided by the Commission*
4. *Excess RECs purchased shall be allowed to be accounted for fulfilling RPO of the following year.*
5. *Quarterly data of RPO compliance to be hosted on the website of the nodal agency*

# RPO Regulations – Comparing Key States : RPO Compliance Status (1/2)

		Non-Solar RPO			Solar RPO		
State		Target(%)	Achieved(%)	Shortfall/Excess(%)	Target(%)	Achieved(%)	Shortfall/Excess(%)
Maharashtra (DISCOM RPO Report for FY 2015-16 - 15.10.2016)	<b>Best-D</b>	8.48	8.35	0.13	0.50	0.62	-0.12
	<b>TPC-D</b>	8.48	8.48	0.00	0.50	1.23	-0.73
	<b>R-Infra-D</b>	8.48	8.51	-0.03	0.50	0.73	-0.23
	<b>MSEDCL</b>	8.48	7.31	1.17	0.50	0.32	0.18
		Target(%)	Achieved(%)	Shortfall/Excess(%)	Target(%)	Achieved(%)	Shortfall/Excess(%)
Gujarat (GEDA-June 2016)	<b>GUVNL</b>	7.50	5.74	1.76	1.50	1.92	-0.42
	<b>TPL</b>	7.50	7.29	0.21	1.50	1.72	-0.22
	<b>Torrent Energy</b>	7.50	7.78	-0.28	1.50	1.55	-0.05
	<b>MPSEZ</b>	7.50	7.59	-0.09	1.50	1.52	-0.02

\*Negative sign implies surplus procurement and vice versa

# RPO Compliance Status- Comparing Key States : RPO Compliance Status (2/2)

		Non-Solar			Solar		
State		Target(%)	Achieved(%)	Shortfall/Excess(%)	Target(%)	Achieved(%)	Shortfall/Excess(%)
<b>Rajasthan</b> (CAO, RUVNL, Jaipur vide letter dated 10.05.2016)		8.20	6.77	1.43	2.00	0.96	1.04
		Target(%)	Achieved(%)	Shortfall/Excess(%)	Target(%)	Achieved(%)	Shortfall/Excess(%)
<b>Karnataka</b> (Latest Tariff Orders of the respective DISCOMs)	<b>BESCOM</b>	10.00	11.78	-1.78	0.25	0.35	-0.10
	<b>GESCOM</b>	5.00	4.60	0.40	0.25	0.39	-0.14
	<b>HESCOM</b>	7.00	6.86	0.14	0.25	0.34	-0.09
	<b>MESCOM</b>	10.00	14.80	-4.80	0.25	0.88	-0.63
	<b>CESC</b>	10.00	11.51	-1.51	0.25	0.23	0.02
	<b>Torrent Energy</b>	7.50	7.78	-0.28	1.50	1.55	-0.05
	<b>MPSEZ</b>	7.50	7.59	-0.09	1.50	1.52	-0.02

\*Negative sign implies surplus procurement and vice versa

# RPO Compliance / Monitoring Status

S. No	Parameters	Maharashtra	Gujarat	Rajasthan	Tamil Nadu	Karnataka	AP
1.	<b>Suo-moto initiatives / order by SERC on RPO compliance monitoring</b>	Yes	Yes	Yes	No	No	No
2.	<b>Year of Issue of order</b>	2016	2015	2016	-	-	-
3.	<b>Penalty on OEs for non compliance of RPO</b>	Yes	Yes	Yes	Yes	Yes	-
4	<b>SNA initiatives for RPO compliance data collection and reporting</b>	Yes	No	Yes	No	No	No
5	<b>Standard forms / formats for RPO compliance data collection</b>	Yes	Yes	Yes	No	No	No

# Suo-Motu Order - Verification and Compliance of RPO by CPP and OA Consumers for FY 2010-11 and FY 2011-12 in Maharashtra (1/2)

## Findings and Recommendations

Gaps Identified	Solutions	Entities Responsible
Incomplete list of obligated CPP and OA consumers.	Accreditation process to be formulated by MEDA	Initial list preparation: MSEDCL and PWD to provide data to MEDA
No streamlined process for identification and registration of OE	DISCOMs to provide support to MEDA in registration of OA consumers	MEDA to formulate accreditation mechanism
Requirement of support from DISCOMs and Electrical Inspector's Office	Support in identification and listing of Captive consumers	Continuous Support form respective DISCOMs and PWD
Energy generation data by captive users not authentic for RPO compliance	Quarterly verification and certification by DISCOMs. Devise process for reporting of energy consumption data of OE by PWD to MEDA. Third party verification	DISCOMs, Electrical Inspector's Office, MEDA
Data submission by OA consumers not verified	Quarterly verification and certification by DISCOMs. Devise process for reporting of energy consumption data of OE by DISCOM to MEDA.	DISCOMs, MEDA
Practical difficulties in monthly data submission	Data submission on quarterly basis	MERC
Lack of standard data formats	MEDA to formulate standard formats in consultation with DISCOMs and Electrical Inspector's Office	DISCOMs, Electrical Inspector's Office, MEDA

# Suo-Motu Order - Verification and Compliance of RPO by CPP and OA Consumers for FY 2010-11 and FY 2011-12 in Maharashtra (2/2)

## Findings and Recommendations

Gaps Identified	Solutions	Entities Responsible
Standard methodology for Energy accounting for computing RPO compliance of Obligated Entities	For the purpose RPO for Captive Users and Open Access Consumers, wheeling case, energy consumption on gross basis (after grossing up of transmission/wheeling loss) may have to be considered.	DISCOMS to provide necessary consumption details of wheeling based Obligated Captive Users and Open Access Consumers
No check exist to verify that RPO compliance by Captive Users and OA Consumers is not counted towards RPO Compliance of the host Distribution Licensee.	DISCOMs to ensure duplication is avoided during reporting of RPO compliance. MEDA to re-verify the same. RPO Data submission formats finalized for data submission by DISCOM to include specific note/declaration on the same . Accreditation of RE would be necessary to avoid duplication	DISCOMs, MEDA
Lack of awareness among Obligated Entities:	MEDA should initiate periodic consultation. DISCOMS should intimate Open Access consumers about RPO compliance requirement at the time of grant of Open Access permission. Electrical Inspector's Office (PWD), should intimate Captive Users about RPO compliance requirement at the time of registration of Captive Users.	MEDA, DISCOMs and Electrical Inspector's Office

<b>Key issues and Recommendations for RPO Compliance Monitoring</b>	
<b>Issues</b>	<b>Recommendations</b>
<b>No streamlined process for identification and registration of OE</b>	DISCOMs and Electrical Inspectorate (EI) to provide support to implementing agencies
<b>Energy generation data by captive users not authentic for RPO compliance</b>	Quarterly verification and certification by DISCOMs. Devise process for reporting of energy consumption data of OE. Third party verification
<b>Data submission by OA consumers not verified</b>	Quarterly verification and certification by DISCOMs. Devise process for reporting of energy consumption data of OE by DISCOM.
<b>Practical difficulties in monthly data submission</b>	Data submission on quarterly basis. The development of RPO web tool will simplify the process of data collection
<b>No standard formats for data submission by DISCOMs/EI/OA/ CPP to implementing agency and to ERC for RPO compliance</b>	To design data collection formats on quarterly basis that will ensure effective data flow between the related entities. The development of RPO web tool will simplify the process of data collection
<b>Standard methodology for Energy accounting for computing RPO compliance of Obligated Entities</b>	For the purpose RPO for Captive Users and Open Access Consumers, wheeling case, energy consumption on gross basis (after grossing up of transmission/wheeling loss) may have to be considered.
<b>No checks exist to verify that RPO compliance by Captive Users and OA Consumers is not counted towards RPO Compliance of the host Distribution Licensee.</b>	DISCOMs to ensure duplication is avoided during reporting of RPO compliance. RPO Data submission formats finalized for data submission by DISCOM to include specific note/declaration on the same . Accreditation of OEs and coding of Re generation facilities/transactions necessary to avoid duplication in the credit of RE energy towards RPO accounting. Standardization of data collection formats can take care of effective data flow between the entities involved
<b>Lack of awareness among Obligated Entities:</b>	To publish a RPO Information Manual and upload it on official website. Also provide copies to all concerned offices for wider dissemination.



# Issues to be addressed by the Generic RPO Compliance Web-tool

## Identification of the OE and their listing

- Accreditation process to be formulated by the implementing agency (on similar lines of REC accreditation), for various CPP and OA consumers as OEs.
- Application will have a facility of creating multi-level users with login credential.
- Super-user (admin) can set the roles and permissions for user and depending on this, users can access the system modules.

## Verification of data submission by CPP and OA consumers

- Quarterly verification and certification by DISCOMs.
- System will have multiple steps for monitoring, validation and verification in different user level/access level.
- Users will get alert through the system after verification and validation of their given information and also generate multiple type report as per their requirements.
- Email service will be implemented within the system based on report submit, validation and verification.

## Practical difficulties in monthly data submission

- Users can regularly update their consumption, generation, procurement and other information in multiple web forms.
- Application will store structured data from given user information.

## No standard formats for data submission by DISCOMs/EI/OA/ CPP to implementing agency and to ERC for RPO compliance

- The tool will have a facility of generate the processed data into multiple user friendly format i.e. Excel, Pdf etc.
- Users will view/classify the data based on Obligated Entity/Type/DISCOM/ location

## Standard methodology for Energy accounting for computing RPO compliance of Obligated Entities

- For the purpose RPO for Captive Users and Open Access Consumers, wheeling case, energy consumption on gross basis (after grossing up of transmission/wheeling loss) may have to be considered.

# Proposed Regulatory Intervention



# Why Regulatory Intervention?

- RPO Regulations of SERCs entrust the responsibility of data collection on State Nodal Agencies :
  - Obligated entities are not voluntarily declaring RPO compliance to SNAs on regular basis;
  - SNAs are facing difficulties in enforcing data collection from obligated entities specifically OA and CPP consumers;
  - SNAs are not empowered to issue notices to obligated entities;

# Proposed Regulatory intervention – I/2

## I. Delegation of Powers to SNA

Section 97 of Electricity Act,2003:

- Section 97 of EA,2003 refers to delegation of powers of the Commission.
- Following amendment is proposed in SERC's RPO Regulations;

***“SNA is empowered on behalf of the Commission;***

- 1. to issue notices to obligated entities;*
- 2. to collect RPO data from obligated entities;*
- 3. to submit the RPO data to the Commission at regular intervals;*
- 4. to submit the RPO compliance report of obligated entities to the Commission at regular intervals.*

# Proposed Regulatory intervention – 2/2

## 2. State Governments to formulate Rule

### Section 180 of Electricity Act,2003:

- Section 180 (1)(o) of EA,2003 refers to powers of State Government to make rules.
- *The State Government by notification shall empower State Nodal Agency;*
  1. *to issue notices to obligated entities;*
  2. *to collect RPO data from obligated entities;*
  3. *to submit the RPO data to the Commission at regular intervals;*
  4. *to submit the RPO compliance report of obligated entities to the Commission at regular intervals.*

## 3. SERCs to advise to State Govt. to formulate Rules

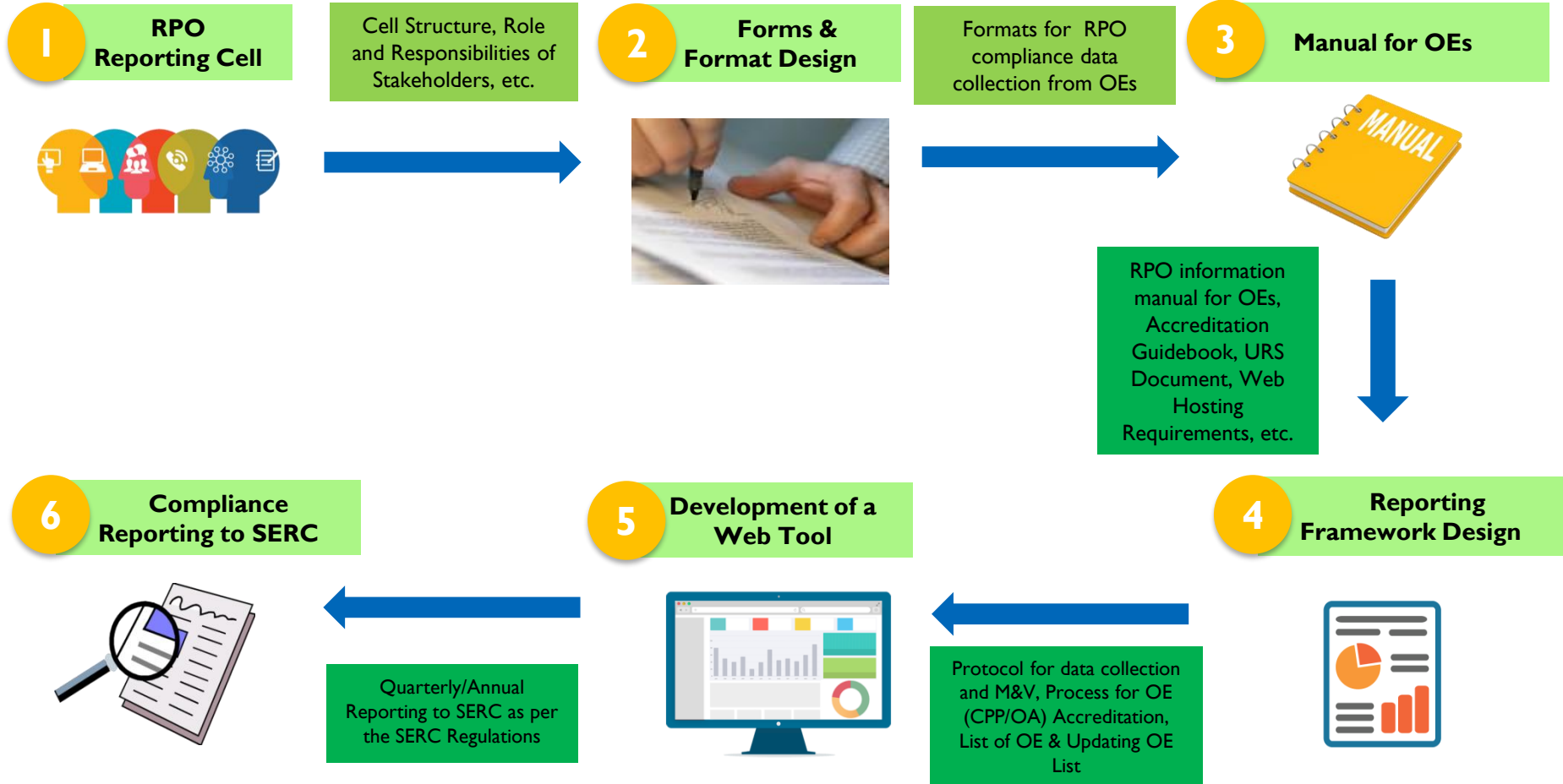
- The SERC may advise State Government under Section 86 (2) of EA,2003 to issue above notification.

# Approach for RPO Compliance Monitoring Framework

*Approach for RPO CMR*

*Scope of Developing Generic RPO Compliance Web-Tool*

# Approach for RPO Compliance Reporting Framework Development

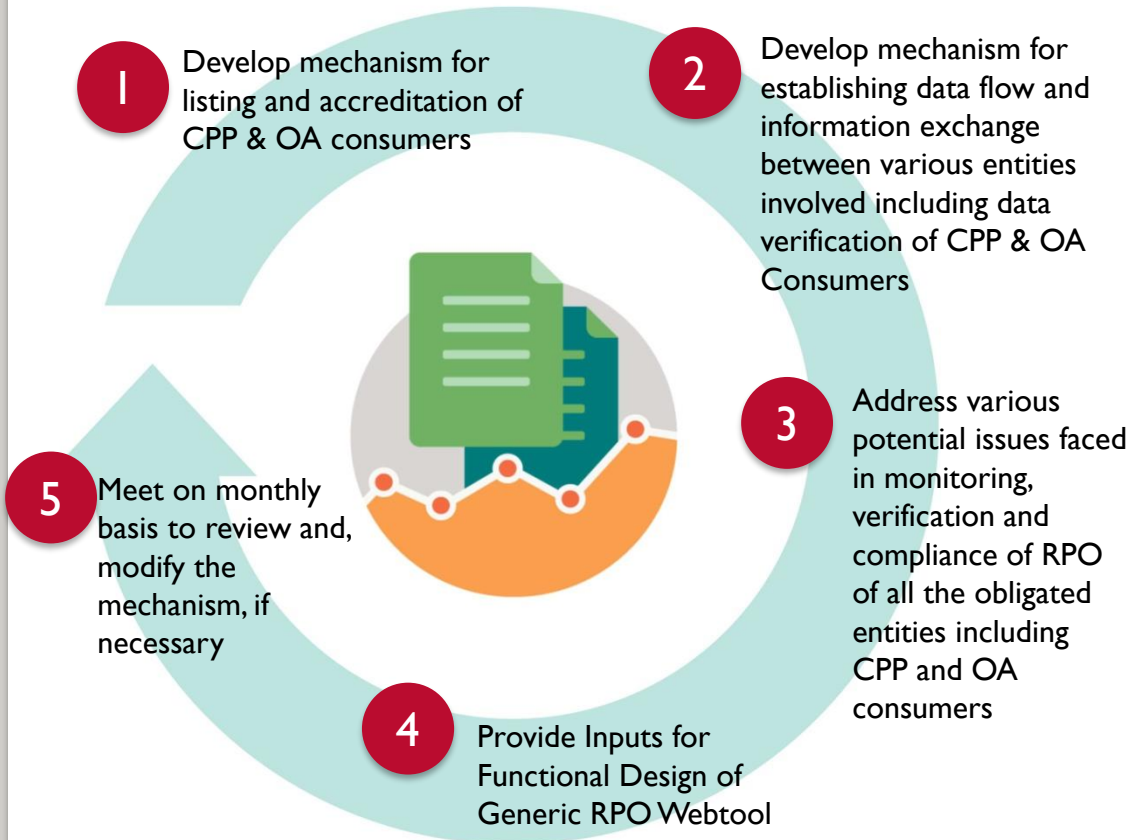


## Scope of Developing Generic RPO Compliance Web Tool

- Constitution of Working Group / Technical Committee at FOR
- Selection of five to six States in consultation with Working Group / Technical Committee
- Analysis of regulatory framework and processes adopted by selected states for RPO compliance monitoring and reporting;
- Development of Key Functionalities of Generic RPO Tool and finalization of the same in consultation with Technical Committee/ Working Group;
- Development of Standard Forms and Formats for filing information of Obligated Entities;
- Development of a standard methodology and protocol for the data collection from OEs;
- Development of Standard URS/SRS and Webhosting Requirement Documents;
- Development of Generic RPO Compliance Web Tool;
- Preparation of Training Manuals
- Outreach and Demonstration of Key Functionalities of the Web Tool to FOR and Selected States.



# Role of Working Group/Technical Committee



FOR shall act as  
convenor of the  
Working Group

Working Group to  
constitute members/  
representatives from  
SERCs & SNAs

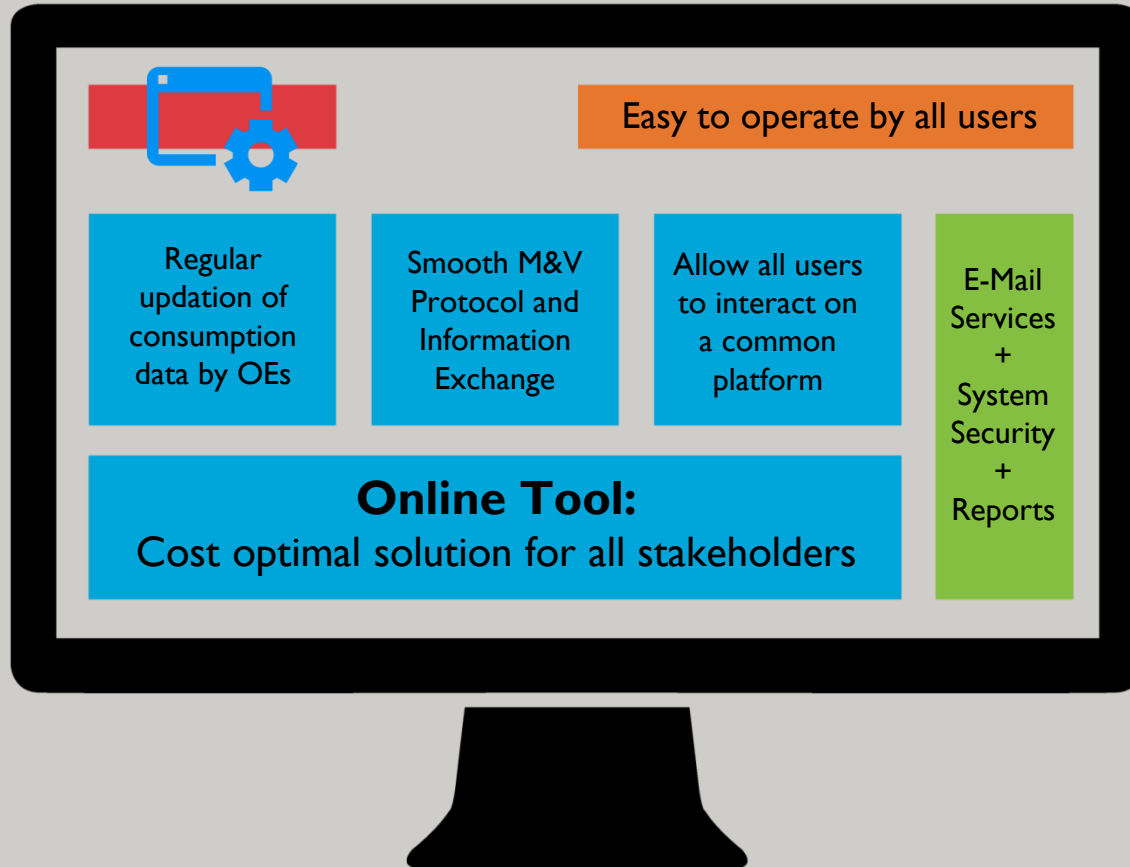
Working Group shall  
submit its report to  
their respective  
Commissions on  
monthly basis  
regarding the  
ongoing  
developments of the  
web-tool

# Generic RPO Web-Tool:

*Key Features*  
*Functionalities*  
*Process Flow*



# Generic RPO Web Tool: Key Features



# Generic RPO Web Tool: Functionalities

1

Defining System Users, their categories and access rights  
(Registration Process)

2

Regular Data Update- Vendors, Contracts, Consumption, etc.  
(Standard Formats)

3

Representation of data to web based online user interface

4

Presentation of Data in user friendly format (PDF)

5

Classification of data based on Obligated Entity/Type/DISCOM/ location

6

Confirmation Mails, Report Generation, etc.

7

Monitoring, Verification and Validation Protocol and Information Exchange

8

Scalable system to incorporate future obligated entities

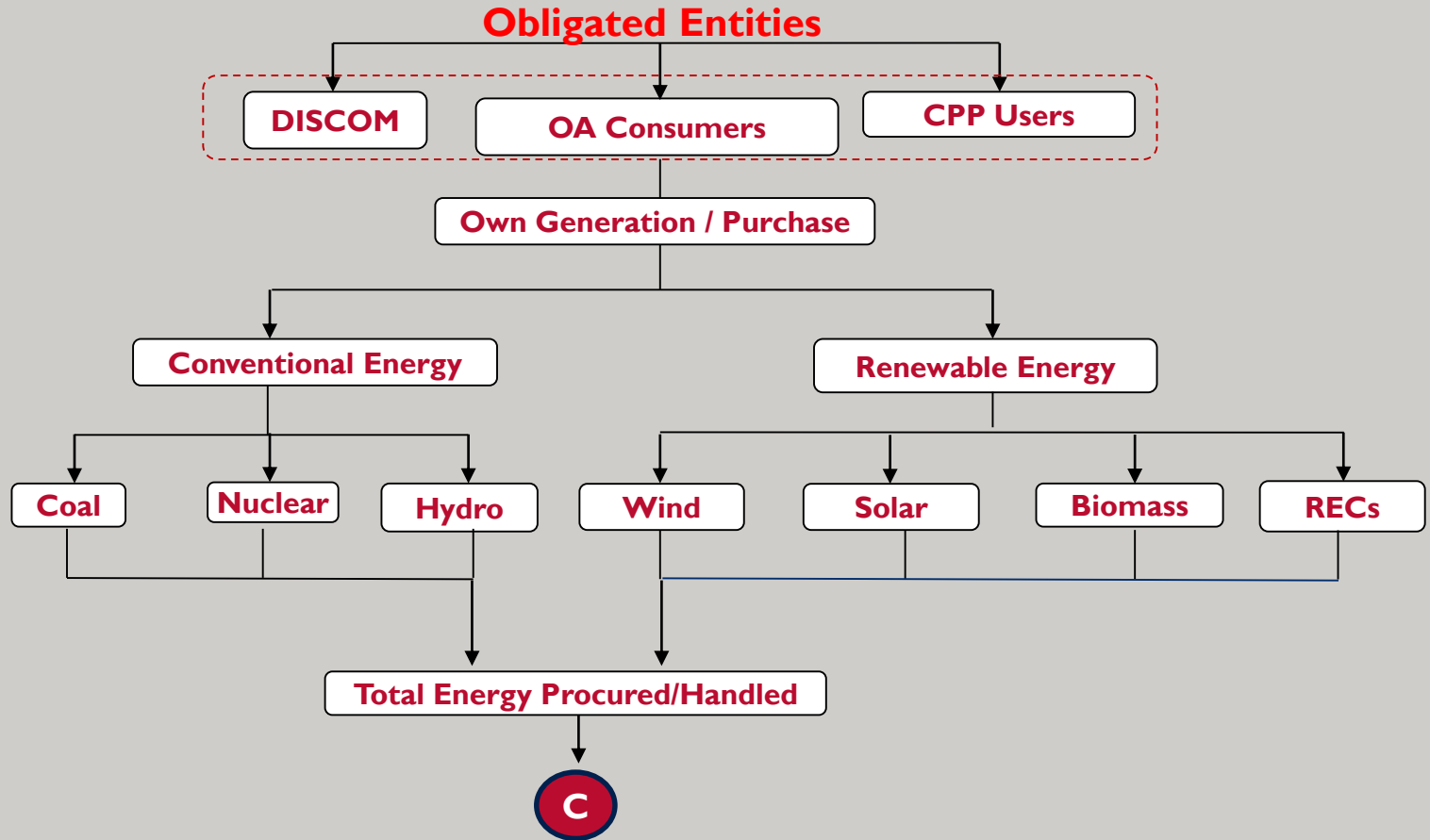
9

E-Mail reminders, System security, Compliance Report Generation, etc.

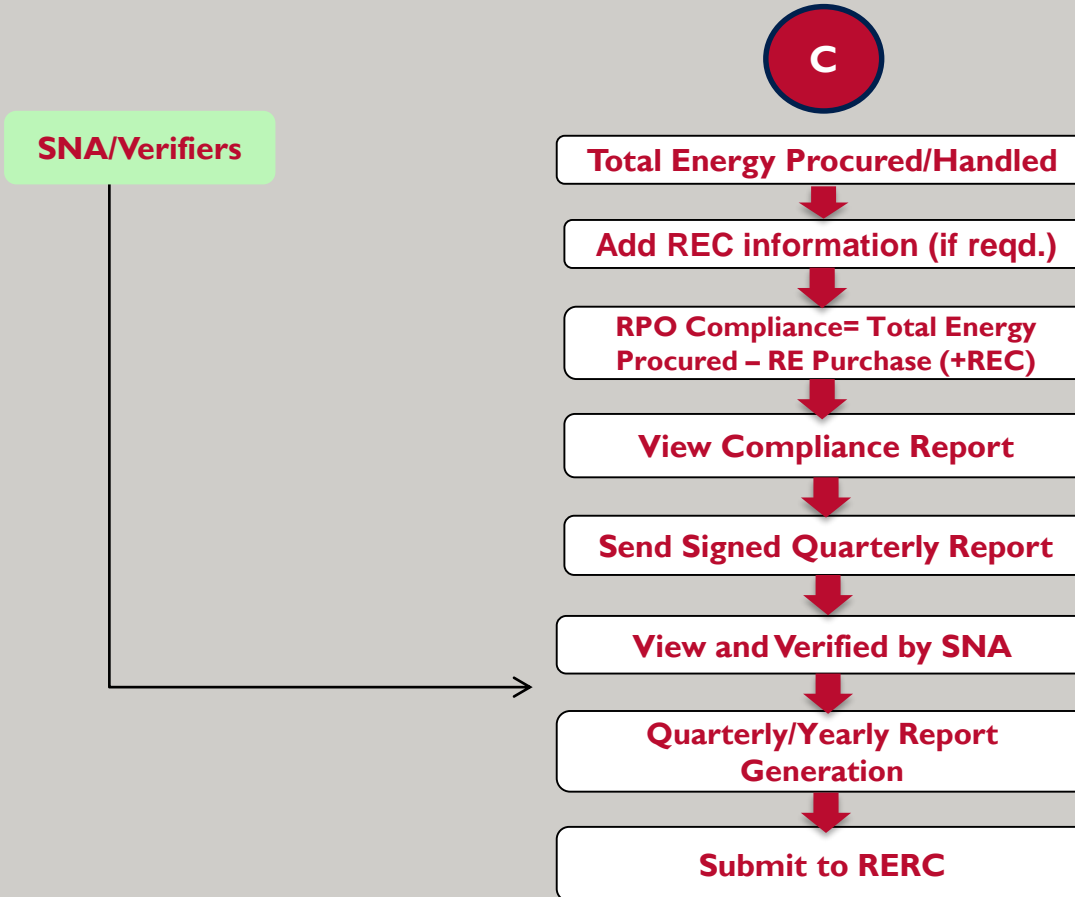
10

Admin Interface for Incorporating new parameters, changes, modifications, etc.

# Generic RPO Web Tool: Process Flow... 1/2



# Generic RPO Web Tool: Process Flow...2/2



## Note:

- All records maintained as per quarter/ financial year.
- No information to be saved without uploading a relevant document as a proof.
- Predefined grace period for data entry as per RRECL directions.

# Demonstration of RPO Web Tool



# Demonstration of RPO Compliance Web Tool: Screen for All Users

## Reference Documents

Provide information related to RPO Regulations, Orders, procedures issued by RERC, NLDC, FOR & CERC



The screenshot shows the 'Renewable Purchase Obligation Compliance System' interface. The top navigation bar includes 'RPOCS', a menu icon, the system name, a notification bell with '0', and a 'COMPANY LOGO' with 'Abc'. The left sidebar contains 'Dashboard', 'Obligated Entities', 'Reports', 'Document', and 'Contact RRECL'. The main content area shows a breadcrumb trail 'Home > Document > Reference Documents' and a section titled 'Reference Documents' with a sub-section 'REC REGULATIONS/ORDERS'. Below this, there is a list of documents with download icons: 'RERC Regulation 2015 - 3rd Amendment', 'RERC Regulation 2014 - 2nd Amendment', 'RERC Regulation 2011 - 1st Amendment', 'RERC Regulations 2010', 'RERC Notification 2007', and 'Nomination of State Agency'.

## Contact Details of RRECL



The screenshot shows the 'Renewable Purchase Obligation Compliance System' interface. The top navigation bar includes 'RPOCS', a menu icon, the system name, a notification bell with '0', and a 'COMPANY LOGO' with 'Abc'. The left sidebar contains 'Dashboard', 'Obligated Entities', 'Reports', 'Document', and 'Contact RRECL'. The main content area shows a breadcrumb trail 'Home > Contact RRECL' and a section titled 'Contact RRECL'. Below this, there is contact information for 'RAJASTHAN RENEWABLE ENERGY CORPORATION LIMITED (Incorporating formerly REDA and RSPCL)'. The contact details are: 'E-166, Yudhishthir Marg, C-Scheme, Jaipur-302005', 'Phone No : 91-141-2225859/ 2228198/ 2229341/ 2221650/ 2229055/ 2223556/ 2222941', 'Fax No : 91-141-2226028', and 'E-Mail: rrec\_jai@yahoo.co.in'.



# Demonstration of RPO Compliance Web Tool: **Obligated Entities Homepage**

**Recent Notifications** →

**Dashboard Summary of an obligated entity** →





**Vendor Requests, Contracts & Periodical Consumptions** →

**Obligation Report of an Obligated Entity** →

**All RPO related Regulatory Documents for Help** →

**RRECL Contact Details** →

**Penalty Clause as per latest RPO Regulations** →

**RPOCS**  **Renewable Purchase Obligation Compliance System**   **COMPANY LOGO** **Abc** 

**Dashboard**

**Obligated Entities** >

**Reports** >

**Document** >

**Contact RRECL**

Home > Dashboard

<b>1,500.00</b> Total Energy Procurement (MUs)	<b>550</b> Total No. of RECs (MWh)	<b>171.00</b> Target (MUs)	<b>-170.45</b> Achieved (MUs)
---	---------------------------------------	-------------------------------	----------------------------------

**Penalty Clause**

*"If the obligated entity does not fulfil the specified renewable purchase obligation, the Commission may direct the obligated entity to deposit into a separate fund, to be created and maintained by obligated entity, 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".*

Please refer to the updated section of "Consequences of Default" in Rajasthan RPO Regulations for more details.

# Demonstration of RPO Compliance Web Tool: Verifier's Home Page

The screenshot displays the RPOCS (Renewable Purchase Obligation Compliance System) interface. A dark blue sidebar on the left contains navigation options: 'RPOCS', 'Dashboard', 'Verification', 'Document', and 'Contact RRECL'. The main content area features a header with the system name, a notification bell with a '5' badge, and a dropdown menu. Below the header, a breadcrumb trail shows 'Home > Dashboard'. The dashboard includes four key performance indicators (KPIs) in colored boxes: 'Total Energy Procurement (MUs)' at 35,075.00, 'Total No. of RECs (MWh)' at 8,510, 'Target (MUs)' at 3,998.55, and 'Achieved (MUs)' at 842.96. At the bottom, there are two expandable sections: 'Pending Verification' and 'Summary Report'. Blue arrows on the left side of the image point from descriptive text to these specific elements in the interface.

Annotation	Interface Element	Value
Name of the Web-Tool	RPOCS	Renewable Purchase Obligation Compliance System
Recent Notifications	Notification Bell	5
Dashboard Summary of an obligated entity	Dashboard	35,075.00 (Total Energy Procurement)
Vendor Requests, Contracts & Periodical Consumptions	Verification	8,510 (Total No. of RECs)
All RPO related Regulatory Documents for Help	Document	3,998.55 (Target)
RRECL Contact Details	Contact RRECL	842.96 (Achieved)
List of Pending Verifications: Contracts & Periodical Consumptions	Pending Verification	-
\Compliance Report Summary of all obligated entities	Summary Report	-

# Demonstration of RPO Compliance Web Tool: RRECL Home Page

Name of the Web-Tool

RPOCS



Renewable Purchase Obligation Compliance System

6



RRECL

Recent Notifications

Dashboard Summary of all obligated entities

Dashboard

Dashboard

General Settings & Automatic E-Mail Alert

System Settings

Home > Dashboard

RPO%, FY, Categories, Manual E-Mail Alerts

State Agency

Energy Contracts & Consumptions for Verifiers

Verification

35,075.00  
Total Energy Procurement (MUs)

8,510  
Total No. of RECs (MWh)

3,998.55  
Target (MUs)

842.96  
Achieved (MUs)

Vendor Requests & Periodical Consumptions

Obligated Entities

Obligation Reports of All Users

Reports

Summary Report

All RPO related Regulatory Documents for Help

Document

RRECL Contact Details

Contact RRECL

# Demonstration of RPO Compliance Web Tool: Compliance Report for All Users

- ❖ All users will have access to generate compliance report based on:
  - ✓ Financial Year
  - ✓ RPO Category
  - ✓ Quarter
  - ✓ Month
- ❖ Compliance Report will give the following information:
  - ✓ Total Energy Procurement
  - ✓ Total RE Procurement
  - ✓ No. of RECs Procured
  - ✓ RPO Target: Both in % & MUs
  - ✓ Achieved-Shortfall/Surplus
- ❖ Report can be generated in PDF file
- ❖ In achieved column, numbers in green denotes surplus compliance & red denotes shortfall

RPOCS
Renewable Purchase Obligation Compliance System
REEL

- Dashboard
- System Settings
- State Agency
- Verification
- Obligated Entities
- Reports
- Document
- Contact RRECL

Home > Reports > Compliance Report

### Compliance Report

Fields marked with asterisk (\*) are mandatory to fill in

Obligated Entity\*

RPO Category

Quarter

Financial Year\*

Month

[Generate Report](#)

### Compliance Report

Obligated Entity	Amplus Solar	RPO Category	All RPO Category						
User Type	Open Access	Period	All Quarters / All Months						
Financial Year	2018-2017	Contracted Load (MW)	100						
Quarter	Month	Total Energy Procurement (MUs)	Category	Renewable Procurement (MUs)	No. of RECs (MWh)	Total Renewable Procurement (MUs)	Target (%)	Target (MUs)	Achieved (MUs)
		A		B	C	D = (B + C/1000)	E	F = A x E	G = (D - F)
Quarter 2	August	1,900.00	Non-Solar	1,000.00	10	1,000.01	8.90 %	169.10	830.91
			Solar	900.00	50	900.05	2.50 %	47.50	852.55
All Quarters	All Months	1,900.00	Non-Solar	1,000.00	10	1,000.01	8.90 %	169.10	830.91
			Solar	900.00	50	900.05	2.50 %	47.50	852.55

# Key Learnings from Rajasthan Case

*Issues and Potential Solutions in RPO Compliance Framework  
Implementation Challenges in Hosting Web-Tool*

# Issues & Potential Solutions in RPO Compliance Framework

## **Practical Difficulties in Data Submission, Verification or Compliance Reporting:**

Continued engagement with all stakeholders through Working Group Committee

## **Lack of Standard Data Formats:**

PACE-D Program has formulated standard formats in consultation with RRECL

## **Defining Roles & Responsibilities of Each Stakeholder:**

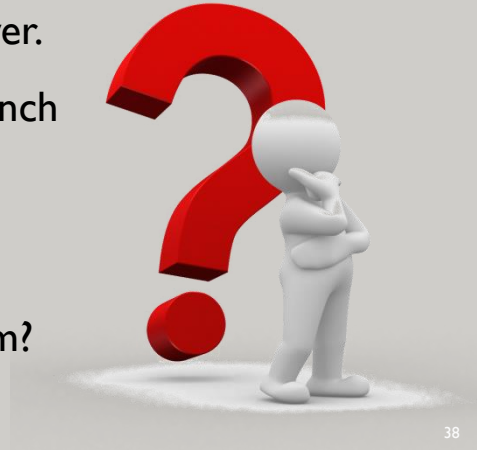
SLDC, DISCOMs, EI, RRECL, etc.

## **Lack of Awareness among OEs:**

- RRECL initiated periodic consultation process by sending letters to CPP & OA consumers
- USAID PACE-D TA Program in consultation with RRECL prepared a Draft Manual for OEs
- DISCOMS should sensitize OA consumers about RPO compliance requirement at the time of grant of Open Access permission
- EI should sensitize CPP consumers about RPO compliance requirement at the time of registration of CPP

# Implementation Challenges in Hosting Web Tool

- **Web Hosting Requirements** (both hardware and software) to be agreed and arranged by the SNA for Web Tool integration.
- Responsibility of **migrating** Web Tool from Test server to RRECL server. **Involvement of multiple agencies** makes the process length & time consuming. In case of Rajasthan, RRECL>RISL>DoIT>Energy Portal Team of Rajasthan.
- **Pilot testing and Launch of Web Tool:** Involvement of IT Resources and dedicated team for pilot testing & preparatory work for hand-over/take-over.
- **Hand over of the tool and** testing the real time data: Expected Launch date?
- Requirement of **security audit** of the web-tool?
- **Ownership and maintenance** of the tool post handover by the Program?
- Planning for **AMC support** for post hand-over for update of Web Tool?



# Way Forward

## Next Steps & Timelines





## Way Forward (Support Required from FOR)

- Support in **creation of Working Group / Technical Committee** to provide necessary guidance/suggestions to the Program for development of Generic RPO Web Tool;
- Support in **selection of five to six representative states** for development of Generic RPO Web Tool;
- Support in **reaching out to selected five to six states for sharing data and information** related to processes adopted for RPO compliance monitoring and reporting;
- **Inputs/suggestions on the proposed approach/scope of work of Generic RPO Web Tool, its functionalities and its time frame;**
- Clarity on **ownership of the Generic Web Tool** post handover by the Program;
- Requirement of **hosting of the Generic Web Tool and Security Audit** of Tool;
- **Functionalities of integration of Generic Web Tool with Web Tool of various other States;**
- Support requirement for **implementation of Generic Web Tool in selected five/six States by doing necessary state specific customization** as per requirement under Regulatory Provision.

# Next Steps & Timelines

S.No.	Activities	Deliverables	Due Date
1	Review and analysis of RPO Regulations and Processes of Selected five/six states	Note on Analysis of RPO Regulations & Processes	December 2016
2	Meeting/ Presentation to Technical Committee	Presentation / Minutes of Meetings	December 2016
3	Development of Standard Forms and Formats for Filing Information for Obligated Entities	Standard Accreditation Process Guidebook	January 2017
4	Development of Standard URS/SRS and Webhosting Requirement Document	Standard URS/SRS and Webhosting Requirement Document	January 2017
5	Development of Generic RPO Web Tool	Source Code or URL of Generic Web Tool	March 2017
6	Preparation of Training Manual	Standard Training Manual	March 2017
7	Meeting/Presentation to Technical Committee of FOR	Presentation/Minutes of Meetings	April 2017
8	Outreach and Demonstration of Key Functionalities of Webtool to FOR and selected States	Presentation / Minutes of Meetings	April/May 2017



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ANNEXURE – V

Form IVA: RPO Compliance (%) – Renewable Energy Sources (Yearly Estimate)

Compliance Year 2016-17 (Upto first Quarter)	Total RPO Obligation as per the RPO Regulations for the year (%)		Actual Purchase of Electricity from Renewable resources at Preferential Tariff for the year (%)		Actual Purchase of RECs from PX for the year (%)		Actual Total Non Solar RPO fulfilled for the year (%)	
	Non-Solar (A)	Solar (B)	Non-Solar (C)	Solar (D)	Non-Solar (E)	Solar (F)	Non-Solar (C) + (E)	Solar (D) + (F)
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
GUVNL	8.25	1.75						
TPL-D	8.25	1.75						
TEL	8.25	1.75						
MPSEZ	8.25	1.75						

