National Solar Summit 2018

Organised by
PHD Chamber of Commerce & Industry

Policy Perspective – Rooftop Solar and RPO Implementation

Ajit Pandit
Director
Idam Infrastructure Advisory Pvt Ltd
(April 19, 2018)
1. Solar Rooftop Sector Development
   • Unified Solar Rooftop Portal (USRTP)

2. RPO Compliance Monitoring Framework
   • Generic RPO Compliance Solution (RPOCS) Webtool
Solar Rooftop Development

- Key Enablers
- Unified Solar Rooftop Portal
India has target of 40 GW by 2022 which amounts to annual capacity addition target of around 6-7 GW per annum.

However, less than 2 GW of Solar Rooftop capacity has been installed till date.

The states which are ahead for solar rooftop installation:
- Punjab
- Tamil Nadu
- Maharashtra
- Karnataka
- Andhra Pradesh
- Gujarat
- Haryana
- Delhi
The 28th Report titled “National Solar Mission – An Appraisal” of the 16th Parliamentary Standing Committee on Energy attributed multiple reasons to the slow take off of solar rooftop.

- Involvement of Multiple approval agencies
- Non uniform framework and agreements across States
- DISCOMs reluctance to operationalize RTSPV.
- Tedious process for project commissioning and subsidy disbursement
- Lack of consumer awareness. Skill and knowledge gap.
- Frequent changes in Government Policies or lack in Policies for RTSPV promotion.
- Slow Growth of GRPV

Idam under the support of USAID PACE-D TA Program carried out a market study in 8 states of the country.

80 developers across states consulted with sample size ranging from 5 to 15 developers in each State.
Idam’s experience: Assistance to Grid Connected Solar Rooftop in various states of India*

* This work has been carried out with the support of USAID Partnership to Advance Clean Energy Deployment (PACE-D) Technical Assistance (TA) Program

<table>
<thead>
<tr>
<th>State</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haryana</td>
<td>Note on Regulatory interventions in regulatory framework of GRPV</td>
</tr>
<tr>
<td></td>
<td>Development of Interconnection Framework</td>
</tr>
<tr>
<td></td>
<td>Senior Management workshop</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>White paper on development of Net metering framework</td>
</tr>
<tr>
<td></td>
<td>Development of Webtool for compliance of RPO regulations</td>
</tr>
<tr>
<td></td>
<td>Interconnection framework for JVVNL</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>Note on interconnection framework</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Development of Renewable Energy Policy</td>
</tr>
<tr>
<td></td>
<td>Development of Solar rooftop policy</td>
</tr>
<tr>
<td></td>
<td>Framework for Gross metering regulations</td>
</tr>
<tr>
<td></td>
<td>Interconnection framework</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>Review of solar rooftop policy</td>
</tr>
<tr>
<td></td>
<td>Support on interconnection framework</td>
</tr>
<tr>
<td></td>
<td>Note on regulatory interventions for GRPV</td>
</tr>
<tr>
<td>Punjab</td>
<td>Senior management workshop</td>
</tr>
<tr>
<td></td>
<td>Note on interconnection framework</td>
</tr>
<tr>
<td>Assam</td>
<td>Preparation of 14 MWp Solar Rooftop Tender and Bid Process Management Support</td>
</tr>
<tr>
<td></td>
<td>Senior management workshop</td>
</tr>
<tr>
<td></td>
<td>White paper on incentive scheme</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>Development of off-grid policy</td>
</tr>
<tr>
<td></td>
<td>Updating Net metering regulations</td>
</tr>
<tr>
<td></td>
<td>Development of vendor manual</td>
</tr>
<tr>
<td></td>
<td>Assistance for establishment of CMC</td>
</tr>
<tr>
<td></td>
<td>Support on RFPs and tenders</td>
</tr>
<tr>
<td>Karnataka</td>
<td>Interconnection Framework</td>
</tr>
<tr>
<td></td>
<td>Development of generic transaction portal</td>
</tr>
<tr>
<td></td>
<td>Development of RPO Webtool</td>
</tr>
<tr>
<td></td>
<td>Senior management workshop</td>
</tr>
<tr>
<td></td>
<td>White paper on impact assessment of RTSPV on utilities</td>
</tr>
<tr>
<td>West Bengal</td>
<td>White paper on impact assessment of RTSPV on utilities</td>
</tr>
<tr>
<td></td>
<td>Note on interconnection framework</td>
</tr>
</tbody>
</table>

Idam Infrastructure Advisory Pvt. Ltd.
To meet the 40 GW target, the utility will play a critical role in ensuring that some of the key building blocks of the solar rooftop eco-system are put in place.
Development of Unified Solar Rooftop Transaction Portal (USRTP)

Application of portal is useful rather important to streamline the process by bringing multiple stakeholders onto a Single Platform. It is important to bring

- Clarity and transparency in the process
- Quick decisions
- Fast processing of application
- Better interaction between stakeholders
- Awareness

Idam has developed Unified portal for the state of Andhra Pradesh.
Unified Solar Rooftop Portal – Key features and functionalities

- Dedicated ‘USRTP Website’ with informative content
- ‘USRTP Application’ enabling inter and intra stakeholder interactions
- ‘Dashboard’ for Consumer providing status update
- ‘Dashboard’ for DISCOM/SNA displaying DISCOM wise and State wide statistics
- Report generation with segregation of data up to ‘Section’ level
- Geo-tagging allows tracking from ‘Application’ to ‘Synchronization’ stage in real time
- Stage wise tracking of Interconnection and Subsidy Application
- Time schedule report generation
- Interface for incorporating new parameters, changes, modifications, etc.
- Interlinkages between USRTP and DISCOM’s internal portal
Snapshot of Unified Solar Rooftop Portal

Website Homepage

User Manual

Apply Online

Channel Partners

Solar Rooftop Calculator

Achievements

Technical Specifications

Net metering and Gross metering

Benefits of Installation

Photo Gallery of Installations

DISCOM Application Process

Subsidy Process

Electrical Inspectorate Process
User friendly Unified Solar Rooftop Portal

Login Page for Consumers, DISCOM and SNA
Transparency and Ease of doing business with Unified Solar Rooftop Portal

**DISCOM Dashboard**

- View Applications
- Meter Procurement Requests
- Allot Time Slots
- Issue Synchronization Certificate

- View Registered Consumer History
- Generate Summary Reports
- Site Visit Schedule

- Monthly Statistics
- Statewide and DISCOM wise Statistics

- Geotag Map
RPO Compliance Monitoring and Reporting

– Need for RPO Webtool
– Key features of RPO Webtool
– Generic RPO framework and launch
**Key Driver for RPO : EA 2003 and Tariff Policy**

- **EA 2003 Section 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 licensee;

- **Tariff Policy 2006,** provided guidance for stipulating RPO Targets
  - Availability of resources in region and its impact on retail tariff for consumers

- **Tariff Policy 2016,** provisions outlined contours for stipulating RPO Targets
  - Seeks State Commissions to fix year wise RPO trajectory so as to reach *17% in the total energy mix by 2022 including minimum 8% from Solar*
  - It also refers to adoption of an appropriate mechanism such as *REC mechanism* to meet their purchase obligation in scenario of RE potential restricted to certain parts of the country

- **Various SERCs have notified RPO Regulations and stipulated RPO targets**
## Comparison of RPO framework for select states

<table>
<thead>
<tr>
<th>S. No</th>
<th>Parameters</th>
<th>Maharashtra</th>
<th>Gujarat</th>
<th>Rajasthan</th>
<th>Tamil Nadu</th>
<th>Karnataka</th>
<th>AP</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.</td>
<td>Operating Period</td>
<td>1April 2016 - 31March 2020</td>
<td>Not specified</td>
<td>Not Specified</td>
<td>The RPO specified for the previous year shall be continued beyond the period till any revision</td>
<td>Not Specified</td>
<td>Not Specified</td>
</tr>
<tr>
<td>4.</td>
<td>Obligated Entities</td>
<td>1. DISCOM</td>
<td>1. DISCOM</td>
<td>1. DISCOM</td>
<td>1. DISCOM</td>
<td>1. DISCOM</td>
<td>1. DISCOM</td>
</tr>
<tr>
<td></td>
<td>2. OA based on conventional fossil fuel (Contract Demand- 5MVA)</td>
<td>2. OA based on conventional generation</td>
<td>2. OA</td>
<td>2. OA</td>
<td>2. OA</td>
<td>2. OA</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. CPP based on conventional fossil fuel (Inst. Capacity- 5MW or above)</td>
<td>3. CPP (Inst. Capacity- 5MW and above)</td>
<td>3. CPP</td>
<td>3. CPP</td>
<td>3. CPP</td>
<td>3. CPP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Third party sale</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>*Such obligation to purchase RE shall include the purchases, if any, from RE sources already being made by concerned OE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Implementing Agency</td>
<td>MEDA Formats specified</td>
<td>GEDA Formats specified</td>
<td>RRECL Formats not specified</td>
<td>SLDC Formats not specified</td>
<td>SLDC Formats not specified</td>
<td>SLDC Formats not specified</td>
</tr>
</tbody>
</table>
Need of RPO Compliance Reporting and Monitoring

- 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.
# Challenges in Implementation of RPO Compliance Monitoring

<table>
<thead>
<tr>
<th>Practical Difficulties in Data Submission, Verification or Compliance Reporting:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued engagement with stakeholders through Working Group would be necessary</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lack of Standard Data Formats:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation of standard reporting formats in consultation with SNA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Defining roles &amp; Responsibilities of Each Stakeholder:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLDC, DISCOMs, EI, SNA</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Lack of Awareness among OEs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• RRECL initiated periodic consultation process by sending letters to CPP &amp; OA consumers</td>
</tr>
<tr>
<td>• USAID PACE-D TA Program in consultation with RRECL prepared a User Manual for OEs</td>
</tr>
<tr>
<td>• DISCOMS should sensitize OA consumers about RPO compliance requirement at the time of grant of Open Access permission</td>
</tr>
<tr>
<td>• EI should sensitize CPP consumers about RPO compliance requirement at the time of registration of CPP</td>
</tr>
</tbody>
</table>

**WEB-BASED TOOL** Monitor, Record & Report

RPO compliance status of OEs to SERC
Support to RRECL for RPO Compliance Monitoring framework & development of Webtool

**MNRE-USAID PACE-D TA Program** supported Rajasthan SNA (RRECL) in the development of RPO Compliance Monitoring and Reporting Framework and Web Tool development.

- Assisted RRECL in the formation of RPO compliance reporting cell and designed the data collection forms.
- Designed framework and institutional structure for RPO Compliance Monitoring & Reporting.
- Developed a Web-based tool for RPO Compliance Monitoring & Reporting.
- Developed Manuals: Accreditation Guidebook, URS Document, Web-Hosting Requirements, Training Manuals, etc. for obligated entities.

- Presented “RPO Compliance Framework for Captive/OA Transactions at State Level” with a focus on RPO framework prepared for RRECL in 51st Meeting of FOR.
- FOR suggested to share the Web Tool/formats for replication in other States.
Approach for RPO Compliance Monitoring Framework

1. RPO Reporting Cell
   - Cell Structure, Role and Responsibilities of Stakeholders, etc.

2. Forms & Format Design
   - Formats for RPO compliance data collection from OEs

3. Manual for OEs
   - RPO information manual for OEs, Accreditation Guidebook, URS Document, Web Hosting Requirements, etc.

4. Reporting Framework Design
   - Protocol for data collection and M&V, process for OE (CPP/OA) accreditation, list of OE and updating OE list

5. Development of a Web Tool
   - Quarterly/Annual Reporting to RERC as per the RERC Regulations

6. Compliance Reporting to RERC
   - Manual

Idam Infrastructure Advisory Pvt Ltd
Stakeholders involved in RPO Compliance Process

**Implementing Agency** - Master Administrator, set up the tool as per the State’s RPO regulations.

**Obligated Entities** - Entities, including OA, CPP, and DISCOM, mandated to comply RPO under the existing/current regulations of the State.

**State Nodal Agency** - Monitor the RPO compliance submitted by the OEs.

**Verifiers** - Check and verify the documents submitted by the OEs.

**SERC** - Review the submitted report in regards to check RPO compliance by the OEs, as well as by the State as a whole.
Key features of RPO Web Tool – 1/2

Admin interface – The web tool provides an admin interface for incorporating new systems, rules, and other necessary changes. The feature is accessible to the implementing agency of the State.

Registration Process - Users can register in the web tool and choose a username and password, which are completely secure.

Multi-User Login - The web tool has the facility to create multi-user login credentials. It also facilitates two-step verification process by providing access to users depending upon the roles and responsibilities.

Regular Updation of data: Users can regularly update their energy consumption, generation, procurement, and other information in multiple predefined web formats.

Alerts: Users will receive alert through the system after the verification, approval and rejection of their documents.
Key features of RPO Web Tool – 2/2

**Email service**: The web tool is featured with services such as mass mails, composing a mail, routine notifications, etc.

**Scalable System for Future**: The web tool has the facility for future update, new process implementation, and addition of new features.

**Classification of Data**: The web tool classifies the information as per the requirement of the user so that the user can receive customized output.

**Report generation**: The web tool has the facility to generate multi-type reports as per the requirement of the user.

**Export data**: The information from the web tool can be exported through user-friendly formats i.e. PDF and Excel formats.
Launch of RPO Webtool at Rajasthan

Launch of a RPO Web Tool at RRECL, Rajasthan (Oct 2017)
Development of Generic framework

Key Considerations for Generic framework
- Mandatory reporting of RPO compliance through use of RPO Webtool
- Clarification on applicability of RPO target for Consumption or Input Energy
- Credit for Solar Energy generated through Solar RTPV systems

Advantages of Generic RPO Webtool are
- Update RPO regulations for current and future years
- Outline the roles and responsibilities of state agencies for RPO monitoring
- Enforcement actions for non-obligation of RPO Compliance
- Strengthen the institutional capacity and infrastructure
Snapshot of Generic RPO Webtool

- System Settings page to setup mails and other settings
- State Agency page to define financial year-wise RPO %
- Verification of energy generator requests, Contracts with energy generator and Periodical consumption.
- Compliance report and other report formats
- Obligated entity summary
- List of Obligated Entities updating data

Webtool has been successfully deployed at Rajasthan, Gujarat and Andhra Pradesh (in process)

Compliance Report Summary of all obligated entities
Launch of Generic RPO Compliance monitoring framework by FOR Technical Committee

Launch of Manual on Generic RPO WebTool during Forum of Regulators' Technical Committee meeting at Sasan, Gujarat (Nov 2017)
In summary . . .

- **Conducive** Policy framework and enabling regulatory regime are important.
- However, smooth **implementation** of Policies are even more crucial.
- “Ease of Doing Business” and “Transparency” are key to accelerated deployment of RTPV systems across states.
- **Standard** process, **uniform** procedures, **Generic operating** framework with use of **IT tools** would facilitate this scale up.
- **Unified Solar Rooftop Portal (USRTP)** and **Generic RPO Compliance System (RPOCS)** would facilitate the process.
- **Quick adoption** of these Tools by authorities/agencies is need of the hour.
Thank You

Contact:
Balawant Joshi       +91 98214 21630
Ajit Pandit          +91 98211 08222

Email:
contact@idaminfra.com

Mumbai
801, Crystal Plaza,
158, CST Road,
Kalina, Santacruz (E),
Mumbai — 400 098
Phone: +91 22 4057 0200

Delhi
A-31, Second Floor,
Lajpat Nagar II,
Near Lajpat Metro Station,
New Delhi — 110 024
Phone: +91 11 4943 4000

Kolkata
T2, 8C, Millennium City IT Park, DN 62,
Sector V, Salt Lake,
Kolkata — 700 091
Phone: +91 33 3012 8485

Hyderabad
House No. 3-51, Flat No. 201,
Abhishek Towers,
(Opp. HAL Gate), Balanagar,
Hyderabad — 500 042
Phone: +91 40 6999 8062