Idam Infrastructure Advisory Pvt. Ltd.

Inter Solar India Conference

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Policy and Regulatory Challenges in Solar Power

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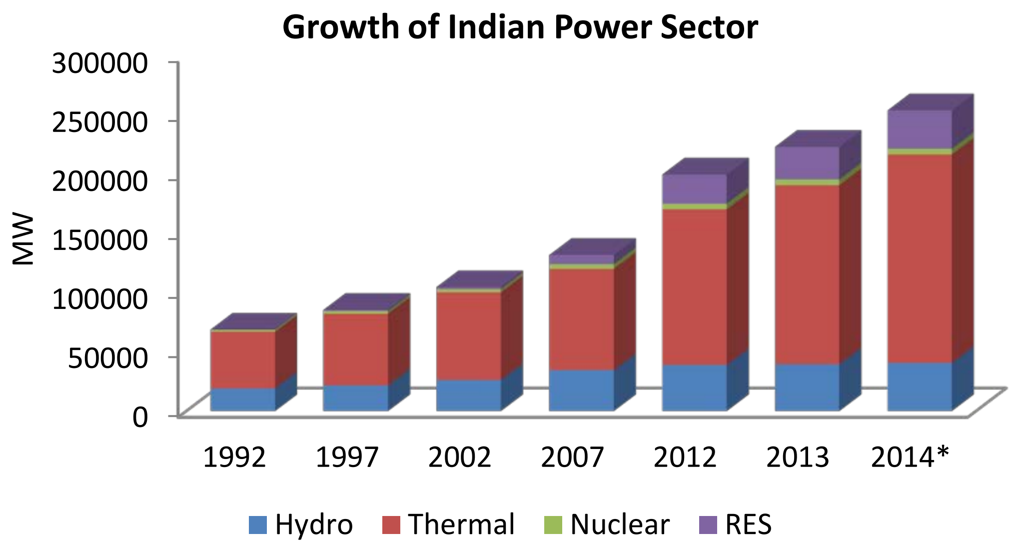
Content

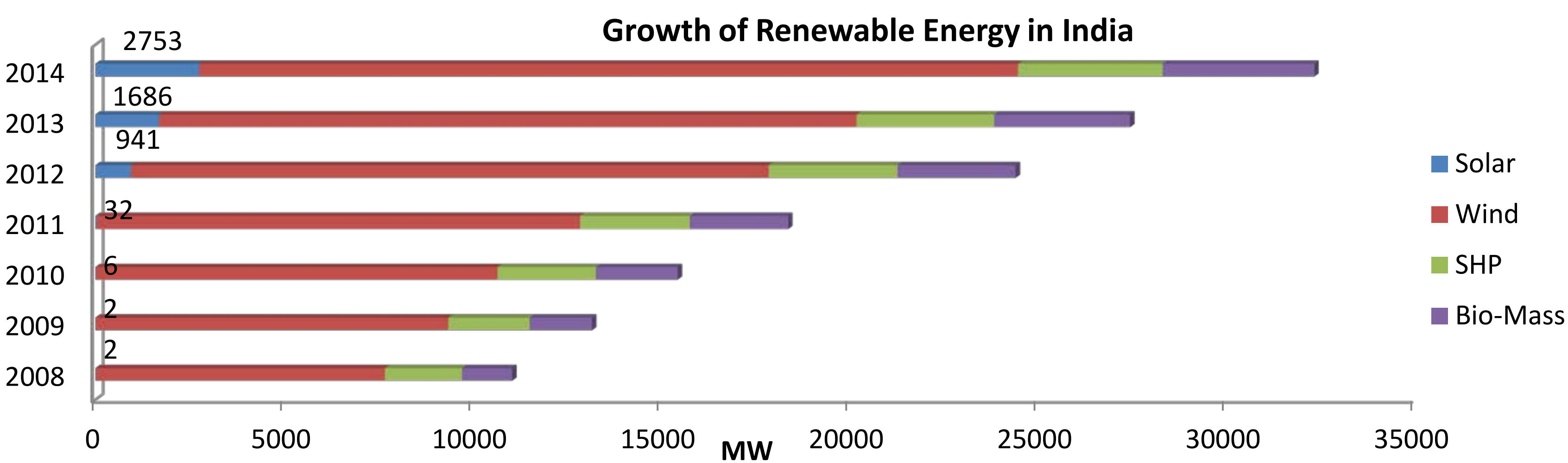
- Solar power development in India
- Key drivers: National and State policy & regulatory initiatives
- RPO Regulations: status update & limitations
- Discussion Points
- Way Forward

Indian Power Sector



Per Capita Consumption

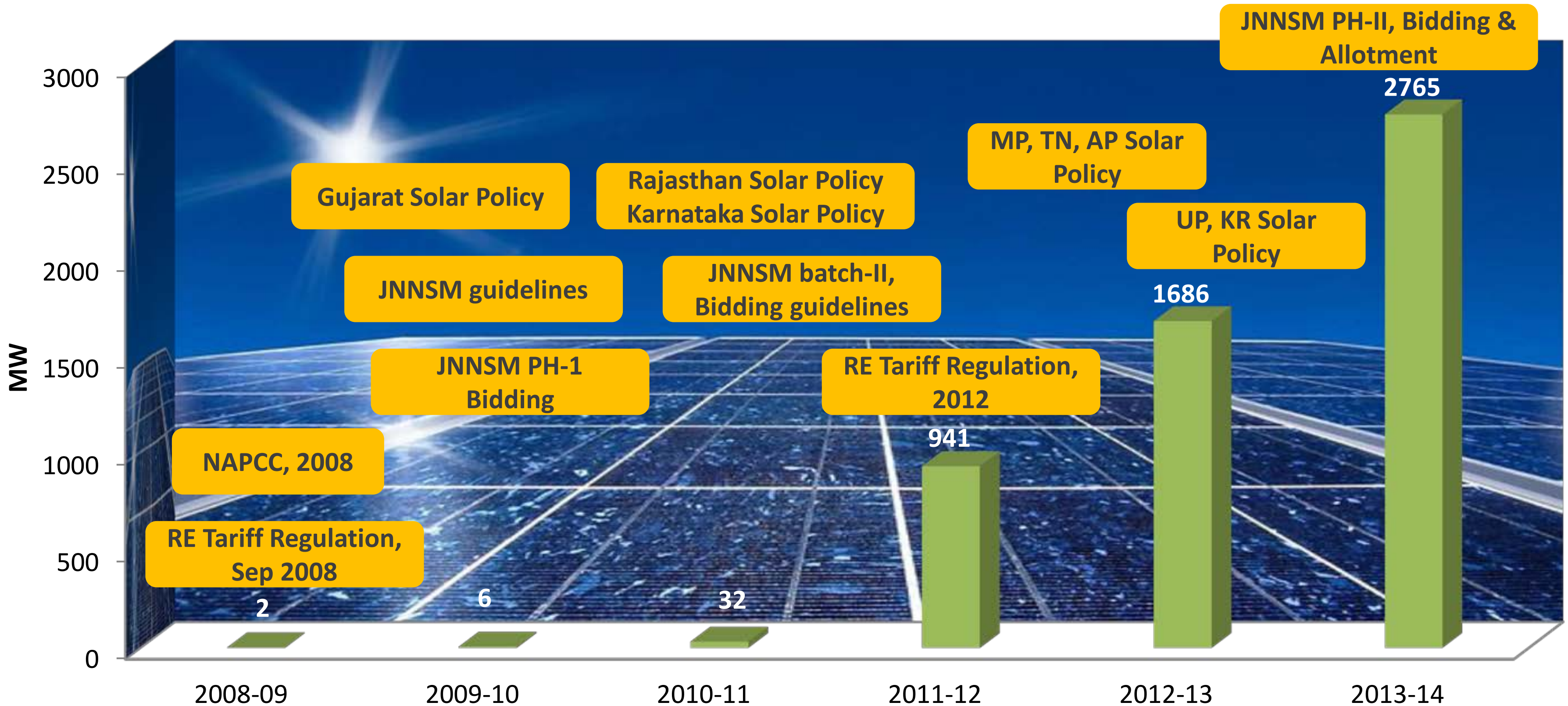
Years	kWh
1992	348
1997	465
2002	559
2007	672
2012	884
2014*	918



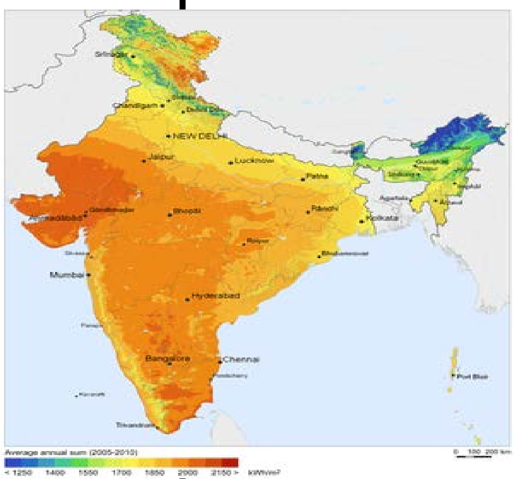
Source: CEA, Status as on Aug, 2014

Growth of Solar Capacity in India

- Solar Power Market has grown from 2 MW (2009) to 2765 MW (November, 2014)
- Key Drivers are regular Policy and Regulatory initiatives, Introduction of new market models, Huge participation from private players, facilitative financing schemes & support measures.



Emerging Role of Solar power in India



JNNSM (Ph-I, II) bidding route (674 MW)

State Policies (1405 MW)

Other Schemes (100 MW)

RPO/REC Route (586 MW)

Total 2765 MW (as on 30^{st} Nov, 2014)

- **Solar capacity addition driven by supply side intervention measures such as feed-in tariff, viability gap funding mechanism, generation based incentive or subsidy for off-grid solar installations.**
- **Achieve grid parity for solar through falling costs and economies of scale.**
- **Limited support through demand driven intervention measures.**

Road Map for Growth of Solar Sector

Legislative Focus on Solar

- **Section 86(1)(e) of EA 2003**: Genesis of RPO
- **National Action Plan on Climate Change (NAPCC)**: National Solar Mission
- **National Tariff Policy Amendment (January 2011):** Separate solar RPO of 3% in phased manner by 2022

Mission/ Policy

- **National Solar Mission (NSM) 2009-10**
- **State Solar Policies**
- ✓ Gujarat - 2009
- ✓ Rajasthan - 2014
- ✓ Karnataka - 2014
- ✓ Madhya Pradesh 2012
- ✓ Tamil Nadu - 2012
- ✓ Andhra Pradesh – 2012
- ✓ Chhattisgarh - 2012
- ✓ Uttar Pradesh - 2013
- ✓ Kerala – 2013
- ✓ Haryana - 2014

Targets

- **NSM:** 22 GW by 2022
- **Rajasthan:** 25 GW by 2022
- **Gujarat:** 10 GW by 2020
- **Karnataka:** 2 GW by 2021
- **Tamil Nadu:** 3 GW by 2015
- **Uttar Pradesh:** 500 MW by 2017
- **Kerala**: 500 MW by 2017
- **Chhattisgarh** – 5-10 GW by 2017

Policy and Regulatory initiative by Key States

Key Initiatives / State →	AP	KR	MP	TN	RJ	MH	GJ
Solar tariff Order	✘	✓	✓	✓	✓	✓	✓
Solar RPO Regulations	✓	✓	✓	✓	✓	✓	✓
REC Framework	✓	✓	✓	✓	✓	✓	✓
RPO Compliance Monitoring	✘	✘	✘	✘	✓	✘	✓
Concessional OA charges	✘#	✓	✓	✓	✓	✓	✓
Banking	✓	✓	✓	✓	✓	✓	✘
Net Metering Framework	✓	✓	✘	✓	✓#	✓#	✘

#In Progress

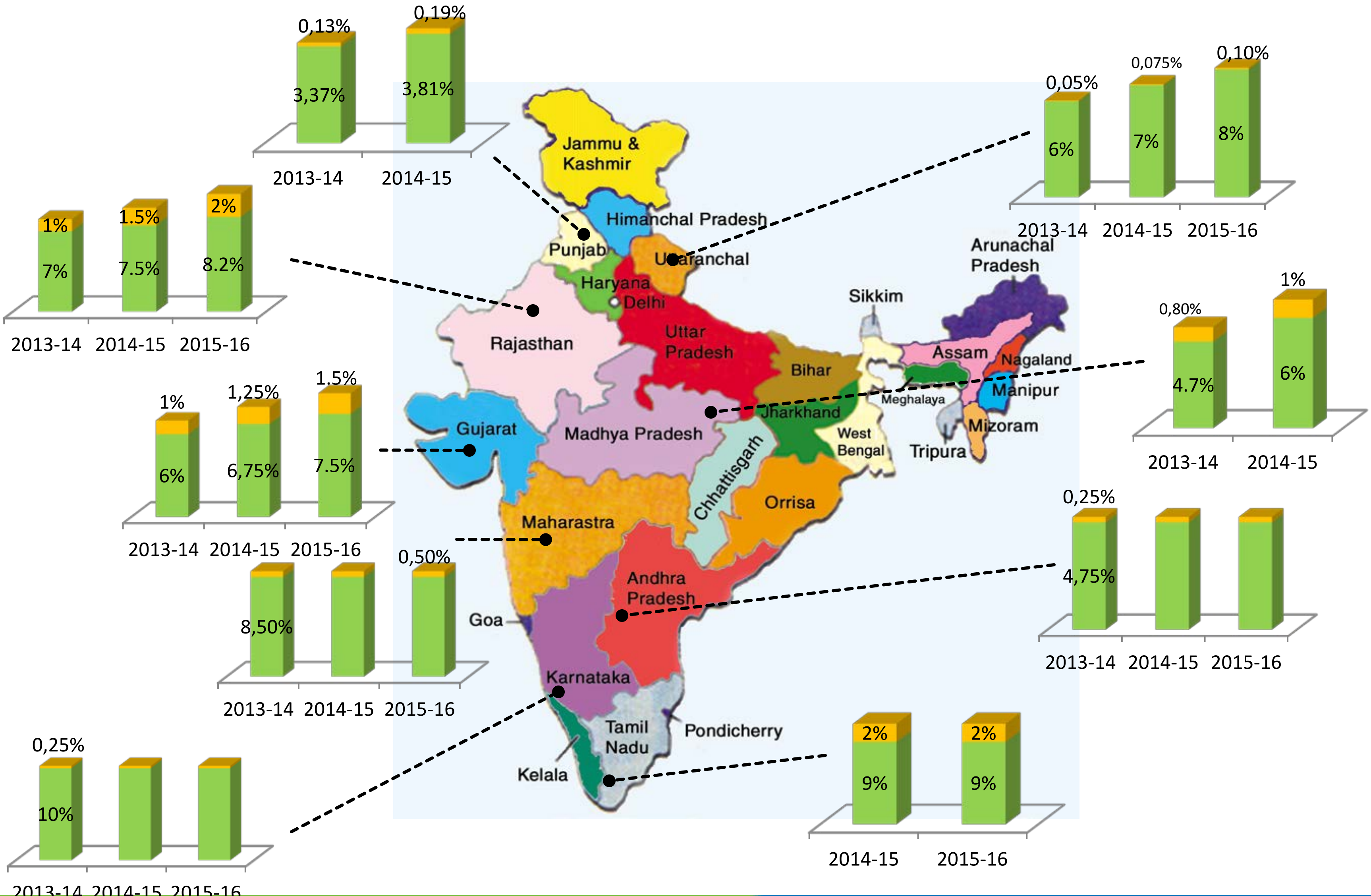
Solar Power Capacity Requirement (FY 2022)

Year	Energy Demand	Solar RPO (%)	Energy Required (MU)	Capacity required (MW)
2014-15	1,174,074	0.75%	8,806	5,291
2015-16	1,258,221	1.00%	12,582	7,560
2016-17	1,348,399	1.25%	16,855	10,127
2017-18	1,443,326	1.75%	25,258	15,176
2018-19	1,544,936	2.25%	34,761	20,885
2019-20	1,653,700	2.50%	41,343	24,839
2020-21	1,770,120	2.75%	48,678	29,247
2021-22	**1,894,736**	**3.00%**	**56,842**	**34,152**

Source: MNRE

- As per the National Tariff Policy, it is envisaged that the targets for Solar RPO shall be 0.25% by 2012-13 extending to 3% by 2022.
- The Jawaharlal Nehru National Solar Mission has been the first step towards achieving these targets.
- After JNNSM, other State also announced their individual solar policies

RPO Trajectory: A Glimpse



Effect of Default as specified by SERCs

<table>
<tr><th>State</th><th>Effect of Default</th></tr>
<tr><td>Chhattisgarh</td><td rowspan="6">(a) The Commission may direct the Obligated entity to deposit into a separate fund, to be created and maintained by such Obligated entity, such amount as the Commission may determine on the basis of the shortfall in units of renewable purchase obligation and the forbearance price decided by the Central Commission
(b) Distribution Licensee shall be in breach of its license condition if it fails to deposit the amount directed by the Commission within 15 days of the communication of the direction
(c) Liable for penalty as may be decided by the Commission under section 142 of the Act
(d) in case of genuine difficulty in complying with the renewable purchase obligation because of non availability of Certificates, the Obligated entity can approach the Commission for carry forward of compliance requirement to the next year</td></tr>
<tr><td>Gujarat</td></tr>
<tr><td>Jharkhand</td></tr>
<tr><td>Karnataka</td></tr>
<tr><td>Rajasthan</td></tr>
<tr><td>Madhya Pradesh</td></tr>
<tr><td>Maharashtra</td><td>The State Commission may direct the OE to deposit into a separate fund, to be created and maintained by such Obligated Entity, such amount as the Commission may determine on the basis of the shortfall in units of RPO, RPO Regulatory Charges and the Forbearance Price decided by the Central Commission; separately in respect of solar and non-solar RPO. Provided that these Charges shall be equivalent to the highest applicable preferential tariff during the year for solar or non-solar RE generating sources, as the case may be.</td></tr>
</table>

Function of State Agencies as defined by SERCs

State	State Agency	Function of State Agency
Chhattisgarh	CREDA	(a) Compilation of quarterly RPO compliance data and publishing on website (b) RPO compliance report to CSERC (c) CPPs/OA consumers need to submit their consumption & RE purchase information to SA
Gujarat	GEDA	Yearly consumption and RPO compliance report to GERC
Jharkhand	JREDA	Quarterly RPO compliance report to GERC in a format as stipulated by JSERC
Karnataka	SLDC	Quarterly RPO compliance report to KERC
Maharashtra	MEDA	(a) Collection of information of OE and calculate RPO compliance data on regular basis (b) Monthly RPO compliance report on its website (c) Quarterly RPO compliance report to MERC
Rajasthan	RRECL	(a) Collection of information of OE and calculate RPO compliance data on regular basis (b) Quarterly RPO compliance report on website and to RERC

Discussion Agenda 1 - Aligning SPO with NTP Targets

Challenges

- No guiding principle for specification of targets by SERCs, no uniformity in specification of targets
- SPOs specified by SERCs do not add up to a national level target
- States who have fulfilled their SPO are not exploring beyond the SPO targets. Thus, minimum SPO targets are actually acting as Ceiling Targets

Way Forward

1. Guiding principle for determination of long term SPO at national level to be formulated
2. Incentives for States having progressive SPO trajectory and achieving them

Discussion Agenda 2 - RPO Compliance Monitoring and Enforcement

Challenges

- No uniform RPO monitoring and enforcement (M&E) mechanism in place
- Monitoring/reporting framework for compliance of SPO regulations is inadequate
- Carry forward of SPO is not helping and making Obligated Entities non serious for SPO compliance

Way Forward

1. Amendments to EA’03 to address following:
   a. Stringent penal provisions to *ensure compliance* of RPO
   b. Solar REC to be recognized as statutory instrument rather than regulatory instrument
   c. Enable SPO applicability on open access and captive user
2. FOR in consultation with MNRE should formulate guidelines for SPO/RPO M&E

Discussion Agenda 3 – SPO Enforcement on CPP / OAC

Challenges

- SPO for Open Access and Captive consumers not clearly covered in EA'03
- Ambiguity around operationalising penalty for non-compliance of SPOs for CPP/OA
- CPP / OA consumers are not complying with SPO regulations
- No framework for identification of obligated entities among the CPP / OAC
- No framework for collection and verification of RPO compliance data from CPP / OAC

Way Forward

1. MNRE should formulate guidelines for SPO/RPO M&V for CPP/ OAC
2. Ensuring involvement of SLDC/STUs and Electrical Inspectorate for tracking CPP/OA entities
3. FOR should formulate model framework for RPO compliance reporting from CPP and OACs

Discussion Agenda 4 – Strengthening of Solar REC Framework

Challenges

- Obligated entities are not purchasing solar RECs to meet their SPO.
- Majority of States allowed carry forward of SPOs starting from FY-11 instead of invoking the penalty (forbearance price, purchase of REC) clause of RPO Regulations
- Solar REC inventory is building up rapidly
- Vintage Solar projects will not be able to survive once the floor price goes down

Way Forward

1. Need for strengthening and modifying mechanism for Solar RECs
2. RECs should be recognized as statutory instrument for meeting RPO/SPO
3. Long term price visibility of RECs
4. Vintage multiplier on solar RECs for vintage solar projects

Way forward

- **Strengthening of Solar RPO framework is the need of the hour.**
  - Future growth of solar market is critically dependent upon long term clarity and certainty about SPO regulations and its enforcement.
- **Institutional strengthening and capacity building is necessary to ensure compliance of SPO by Obligated Entities**
  - Capacity Building of State agencies responsible for Compliance monitoring and reporting is necessary.
  - FOR to evolve uniform framework for the purposes.
  - MNRE to support initiatives of SNAs.
- **Regulatory initiatives needed**
  - Modification and strengthening of solar REC framework is necessary.
  - Enforcement provisions incl. amendment to Act/Tariff Policy, if necessary, should be brought in.

Thank You

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