



# Market for Renewable Energy Certificates

**Central Agency**

**National Load Despatch Centre(NLDC)**

Minaxi Garg, DGM(NLDC)

# Typical Statistics

## Indian Power System

Installed Capacity – 258 GW

Thermal (180 GW ),  
Hydro (40 GW), RE (32 GW)

All India Peak Demand Met  
Max.- 138 GW

All India Energy Met  
Max.- 3120 MUs/day

Short Term Open Access  
Avg. – 240 MUs/day

Inter-Regional Energy Exchange  
Avg. – 225 MUs/day

## Wind Power System

Installed Capacity – 22.5 GW

All India Wind Generation  
Max.- 225 MUs

All India Wind Generation  
Avg.- 80 MUs (2014)

Southern Region  
Max.-126 MUs , Avg.- 40 MUs

Western Region  
Max.- 102 MUs , Avg.- 30 MUs

Northern Region  
Max.- 33 MUs , Avg.- 10 MUs

# The Electricity Act, 2003 :

## Enabling provisions

- ❖ Section 86(1)(e): Specify Renewable Purchase Obligation (RPO), grid connectivity
- ❖ Section 61(h): Tariff regulations to be guided by promotion of renewable energy sources
- ❖ Section 3: National Electricity Policy, Tariff Policy and Plan
- ❖ Section 4: National Policy permitting stand alone systems including renewable sources of energy for rural areas

## The Electricity Act, 2003: Section 86(1) (e)

The State Commission shall discharge the following functions, namely:

*“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;”*

## The Electricity Act, 2003: Section 61(h)

- ❑ The Appropriate Commission shall, subject to the provisions of this Act, specify the terms and conditions for the determination of tariff, and in doing so, shall be guided by the following, namely:-

*(h) the promotion of co-generation and generation of electricity from renewable sources of energy;*

# National Electricity Policy: 2005

- Urgent need of promotion non-conventional and renewable sources of energy
- Efforts need to be made to reduce the capital cost of such projects
- Cost of energy can be reduced by promoting competition within such projects
- Adequate promotional measures would have to be taken for development of technologies and sustained growth of these sources
- SERCs to provide suitable measures for connectivity with grid and fix percentage of purchase from Renewable sources
- Progressively the such share of electricity need to be increased

# Tariff Policy:2006

- Appropriate Commission shall fix RPO and SERCs shall fix tariff
- Initially Appropriate Commission to fix preferential tariffs
- In future Discoms to procure RE through competitive bidding within suppliers offering same type of RE
- In long-term, RE technologies need to compete with all other sources in terms of full costs
- CERC to provide guidelines for pricing non-firm power if RE procurement is not through competitive bidding

# National Action Plan on Climate Change (NAPCC), 2008

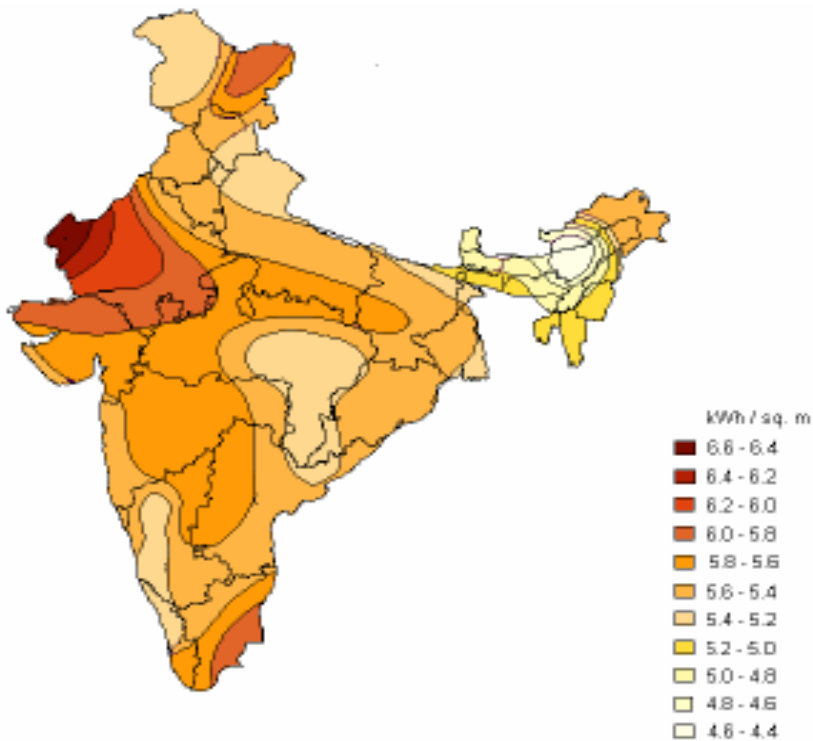
- National level target for RE Purchase
  - 5% of total grid purchase in 2010, to be increased by 1% each year for 10 years: 15% by 2020
- SERCs may set higher target
- Appropriate authorities may issue certificates that procure RE in excess of the national standard
  - Such certificates may be tradable, to enable utilities falling short to meet their RPO
  - RE generation capacity needed: From 25000 to 45000 MW by FY2015



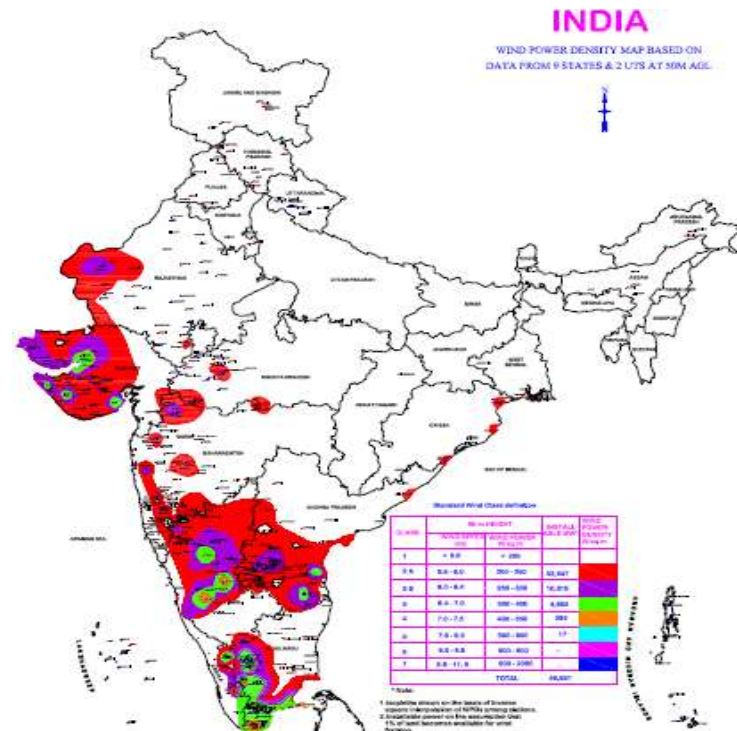
# REC – CONTEXT

## Unevenly Distributed RE Resources

SOLAR



WIND



- Resource rich states not willing to purchase high cost RE power beyond RPO
- Variability : Inter-state transmission is also difficult

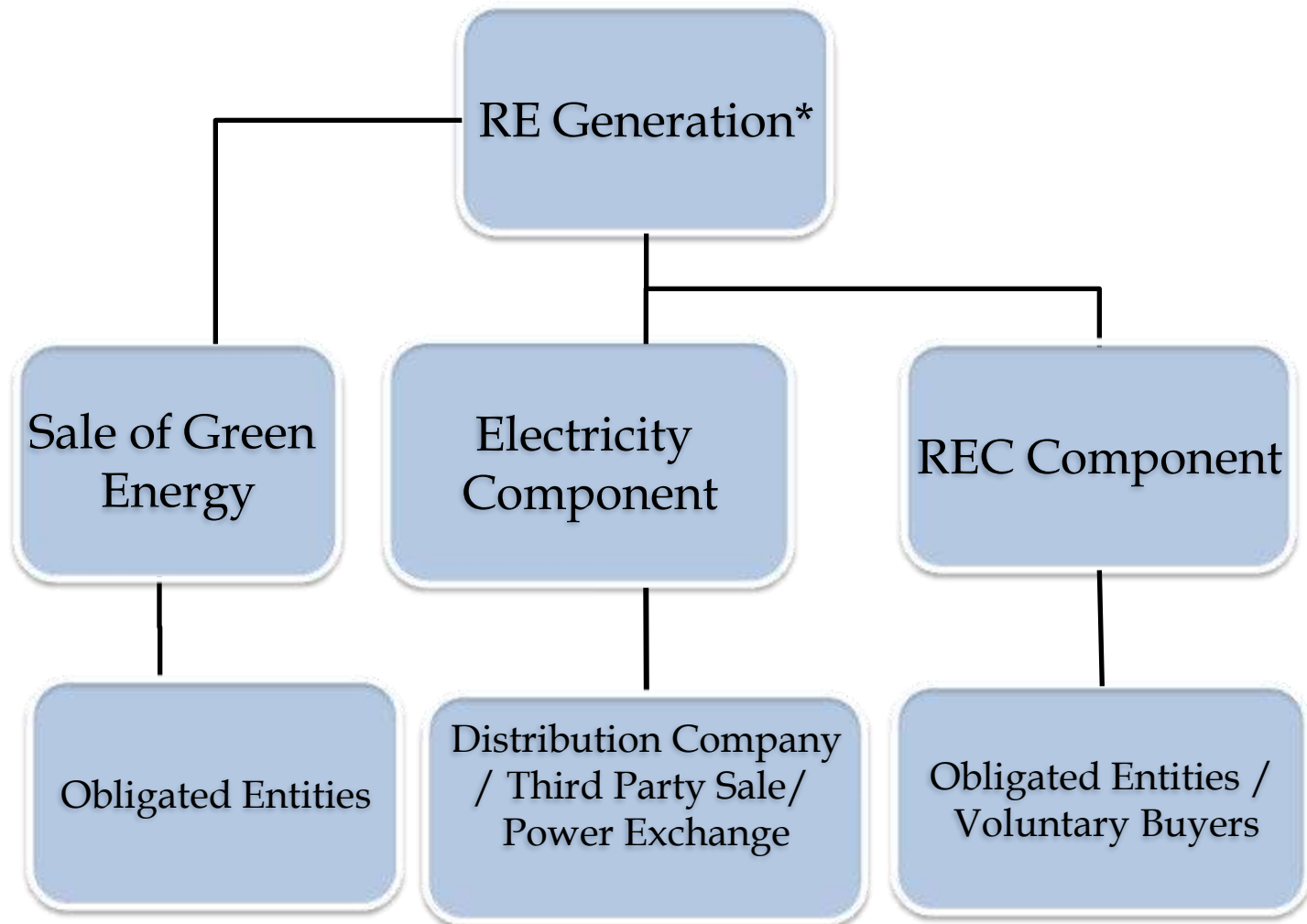
# Need for REC Mechanism

## **RE Sources are not evenly distributed across India**

- ❖ Inhibits the SERCs of potential deficit states from high RPO
- ❖ Potential rich states
  - Already set higher RPO, still avenues left for new plants
  - Very high cost of generation from RE sources
    - Discourages local DISCOM to purchase beyond RPO

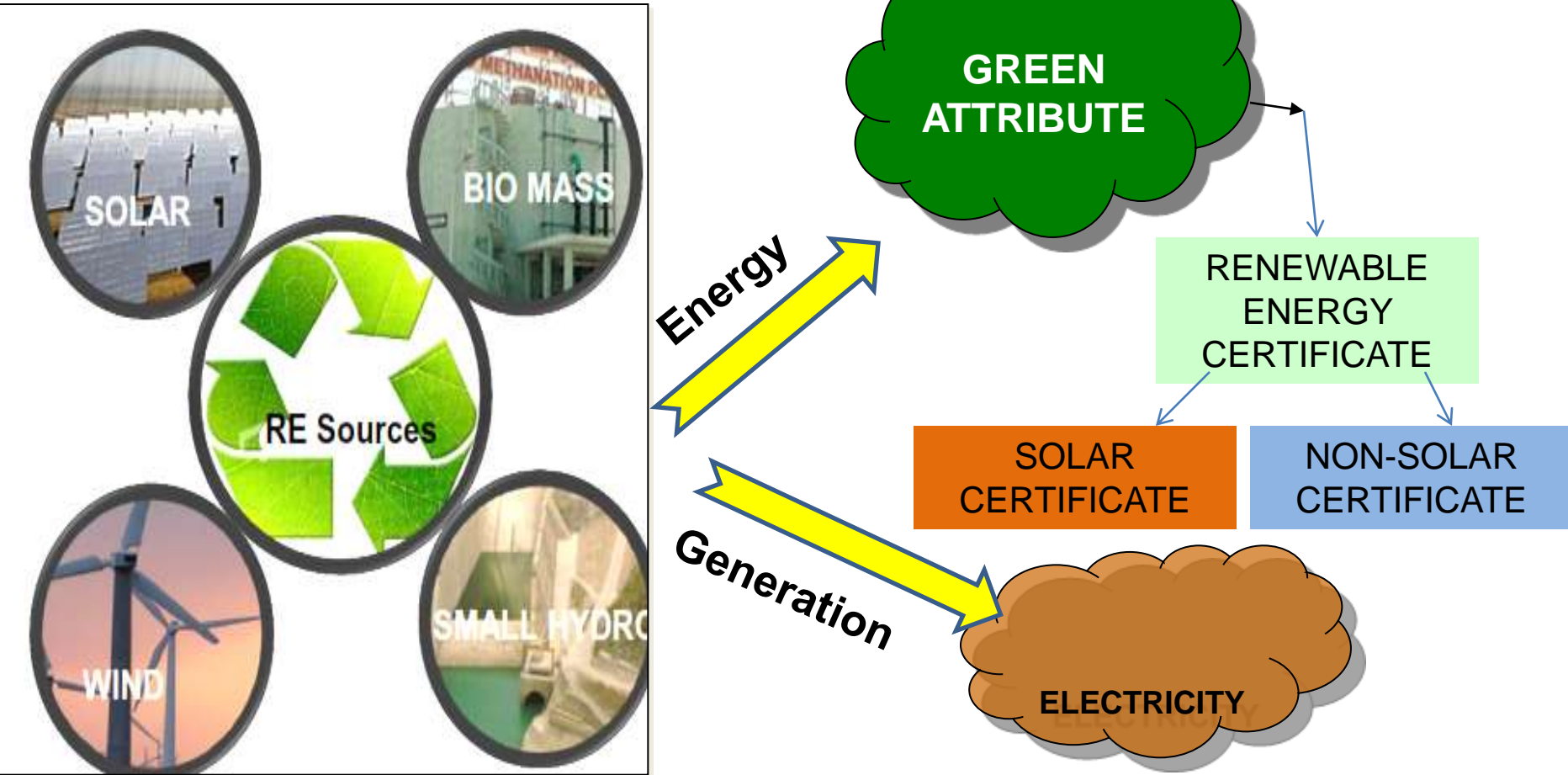
**REC to address the mismatch between availability of RE sources and the requirement of RPO**

# CERC REC Regulations -2010



\* Self consumption by CPPs based upon renewable generation are eligible for RECs

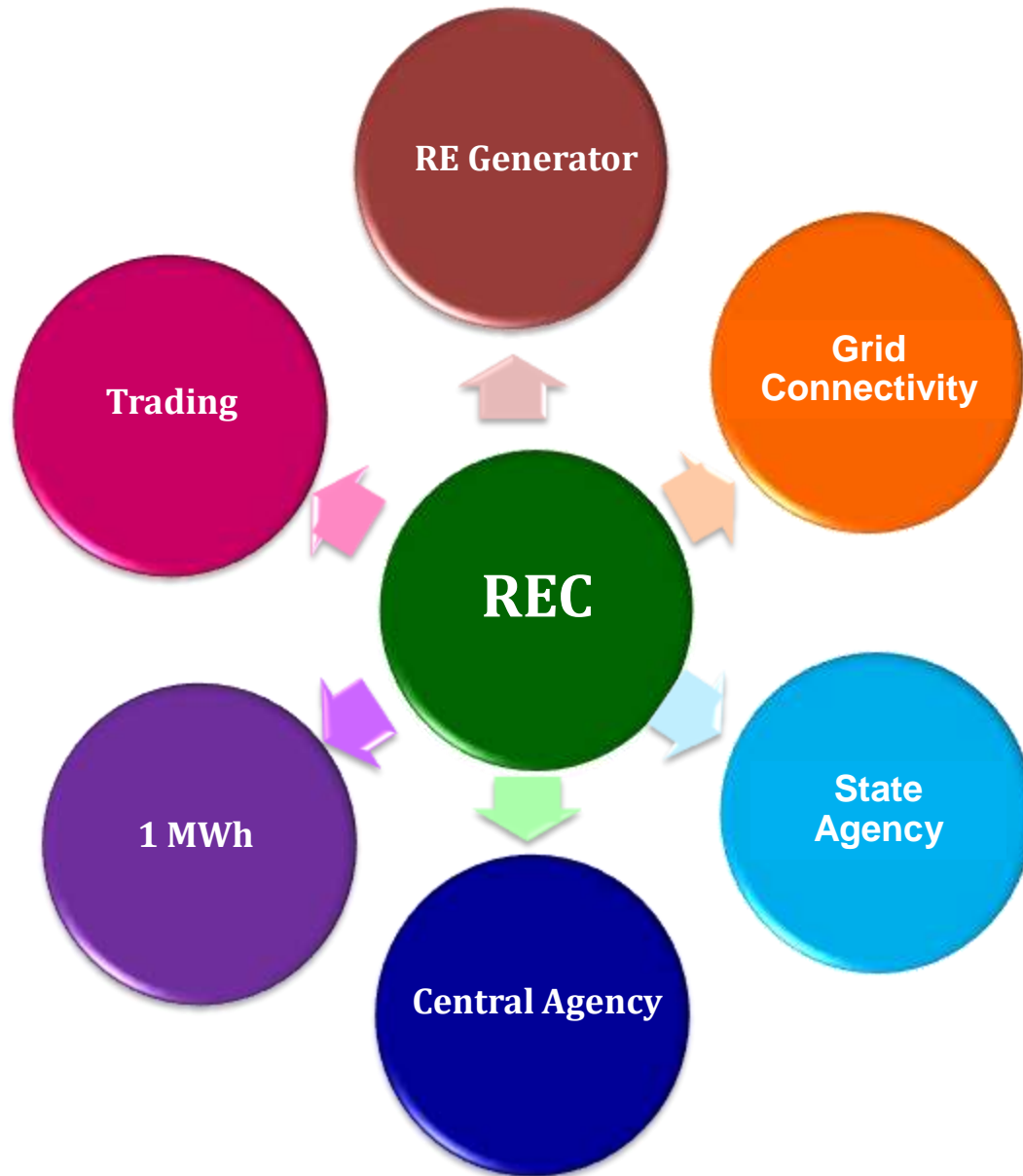
# REC Concept



## Key Highlights:-

- Provides commercial mechanism for promoting renewable Energy
- Translates Government Policy to Action
- Brings in Investment in the Renewable Sector
- Platform for Environmentally concious Individuals and Corporates to Contribute

# Salient Features of REC Mechanism



# Entities involved in REC Mechanism

## Central

- Forum of Regulators
- Central Electricity Regulatory Commission
- Central Agency (National Load Despatch Centre)
- Power Exchanges
- Compliance Auditors

## State

- State Electricity Regulatory Commission
- State Load Despatch Centre
- State Agencies
- Eligible Entities
- Obligated Entities

# Chronology of Events

- **Jun, 08** --- FOR initiated study for increasing RE Share and feasibility of REC
- **Jun, 08** --- PM announced NAPCC (REC included in NAPCC)
- **Oct, 09** ----- FOR approved Model REC Regulations
- **Jan, 10** ---- CERC notified REC Regulations
- **Jan, 10** ----- NLDC designated as Central Agency
- **Jun, 10** ----- CERC issued Order on Floor and Forbearance Price
- **Jun, 10** ----- CERC approved REC detailed procedures submitted by NLDC
- **Sep, 10** ----- CERC issued Order on REC Fees & Charges
- **Nov, 10** ----- REC Mechanism Launched
- **Mar, 11** ----- 1<sup>st</sup> REC Trading
- **Sep,10** ----- 1<sup>st</sup> Amendment in REC Regulations
- **July,13** ----- 2<sup>nd</sup> Amendment in REC Regulations
- **Dec'14** ----- 3<sup>rd</sup> Amendment in REC Regulations

# REGULATORY PROVISIONS

## Renewable Energy Certificate Mechanism (REC): Eligibility

Grid Connected RE technology approved by MNRE



Self  
Consumption/  
Captive use

No Promotional  
Wheeling

No Promotional  
Banking

Eligible if both conditions mentioned  
above are met

Third party sale/Open  
Access

Sale at Mutually  
Agreed Price

Eligible

PPA with Distribution  
Licensee

Sell to DISCOM at  
Pooled cost of  
Power Purchase

Eligible

PPA at rates as  
determined  
under section 62  
and 63 of Act

Not Eligible



# REC Process

Welcome Guest



भारतीय अक्षय ऊर्जा प्रमाणपत्र पंजीकरण  
RENEWABLE ENERGY CERTIFICATE REGISTRY OF INDIA

- मुख्य पृष्ठ / Home
- आरईसी के बारे में / About REC
- संबंधित दस्तावेज़ / Reference Documents
- कार्यप्रणाली / Procedures
- आरई जेनरेटर / RE Generators
- राज्य एजेंसियां / State Agencies
- रिपोर्ट / Reports
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- हमसे संपर्क करें / Contact Us
- पंजीकरण/निर्गमन जांच सूची / Registration / Issuance Checklist
- पंजीकरण/निर्गमन शुल्क / Registration / Issuance Fee
- क्षमता अभिवृद्धि / Capacity Building
- मुख्य बिन्दु / Highlights
- मानचित्र / Map
- डाक प्रक्रिया / Dak Procedure
- प्रतिक्रिया / Feedback

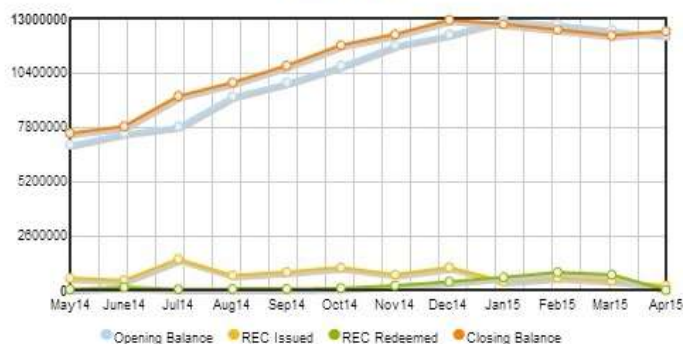
Service Tax Pending details [View Details](#) NotIn  
Annual Fees Pending for the Financial Year 2014-15 [View Details](#) NotIn

## What is REC?

The Electricity Act, 2003, the policies framed under the Act, as also the National Action Plan on Climate Change (NAPCC) provide for a roadmap for increasing the share of renewable in the total generation capacity in the country. However,

Renewable Energy (RE) sources are not evenly spread across different parts of the country. [Read More >>](#)

## REC Graph



Total Signed Up RE Generators Till Now - 2661

## REC Summary

3 of 4

### STEP 3 Issuance of REC

The basic procedure for issuance of Renewable Energy Certificates to the Eligible Entities includes the following steps:

**STEP 3:** An application for issuance of Renewable Energy Certificate shall be made by the Eligible Entity to the Central Agency. [Read More >>](#)

Month, Year	Opening Balance (A)	REC Issued (B)	No. of REC Redeemed		Total E=(C+D)	Closing Balance (F=A+B-E)
			RECs Redeemed through Power Exchanges (C)	RECs retained by RE Generators (D)		
May, 2014	6968438	568843	31375	-	31375	7505906
June, 2014	7505906	471982	141108	-	141108	7836780
Jul, 2014	7836780	1485060	38442	-	38442	9283398
Aug, 2014	9283398	702700	51844	-	51844	9934254
Sep, 2014	9934254	859795	24013	25000	49013	10745036
Oct, 2014	10745036	1074046	74381	20000	94381	11724701
Nov, 2014	11724701	731207	197162	25457	222619	12233289
Dec, 2014	12233289	1087197	337782	60400	398182	12922304
Jan, 2015	12922304	411590	569149	46085	615234	12718660
Feb, 2015	12718660	593085	792356	57747	850103	12461642
Mar, 2015	12461642	453091	723967	13543	737510	12177223
Apr, 2015	12177223	208644	-	-	0	12385867
<b>Total:</b>		<b>22050227</b>	<b>9416128</b>	<b>248232</b>	<b>9664360</b>	

Log In

Password

Log In >>

Forget/Resend Password

**Sign Up**  
New RE Generators

## Related Links

- MNRE
- MoP
- CERC
- FOR
- Central Agency/NLDC
- SERCs
- State Agencies
- Power Exchange

Visitor Number - 5550369  
PhotoGallery

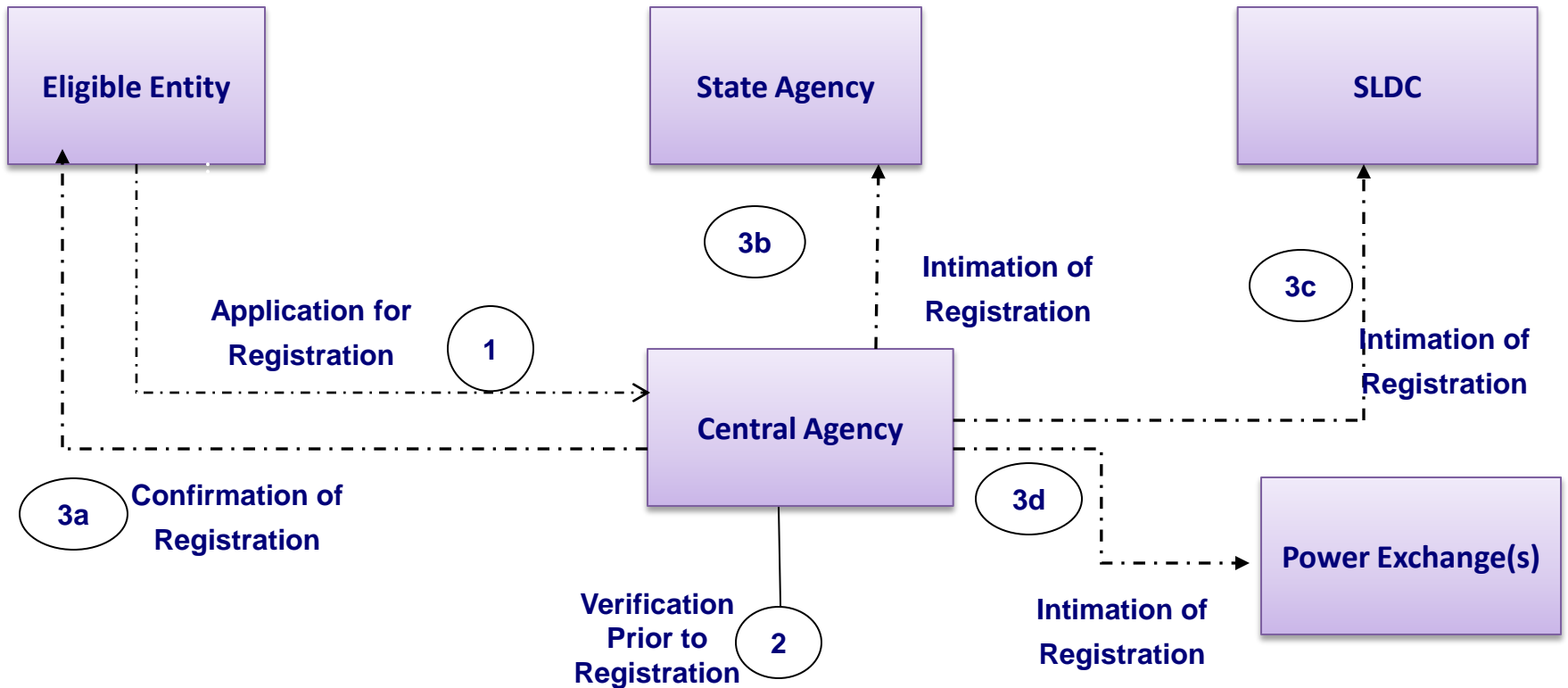
## Accreditation Charges

S.N.	Fee and Charges towards Accreditation	Amount in ₹
1	Application Processing Fees (One Time)	5,000
2	Accreditation Charges (One Time)	30,000
3	Annual Charges	10,000
4	Revalidation Charge at the end of five (5) years	15,000

## Fees and charges payable to Central Agency

S. No.	Fee and Charges towards Registration	Amount in Rs.
1	Application Processing Fees (One Time)	1000
2	Registration Charges (One Time)	5000
3	Annual Charges	1000
4	Revalidation Charge at the end of five (5) years	5000
5	Issuance of REC	04

# Schematic Description: Registration Procedure

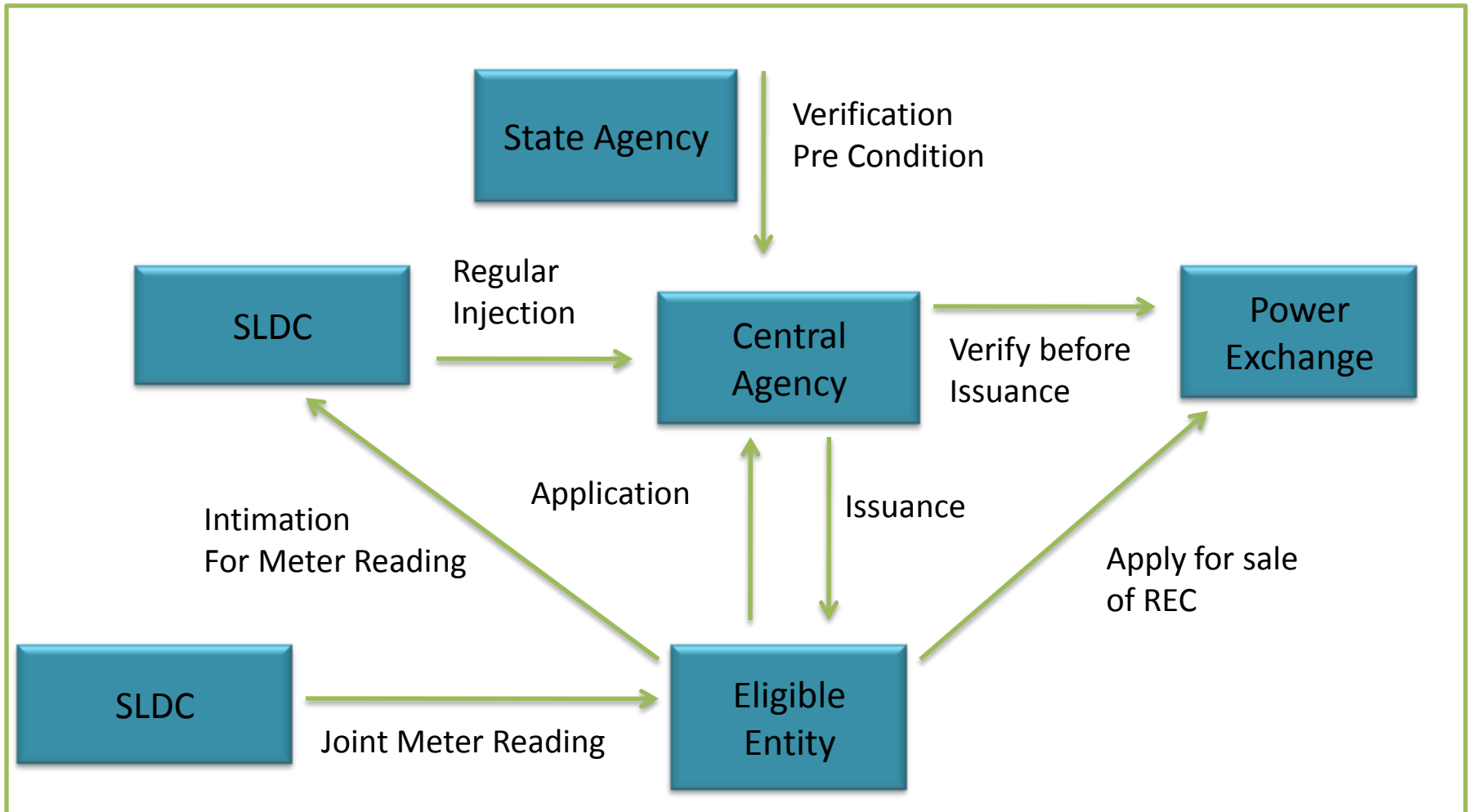


## Information to be furnished by the applicant

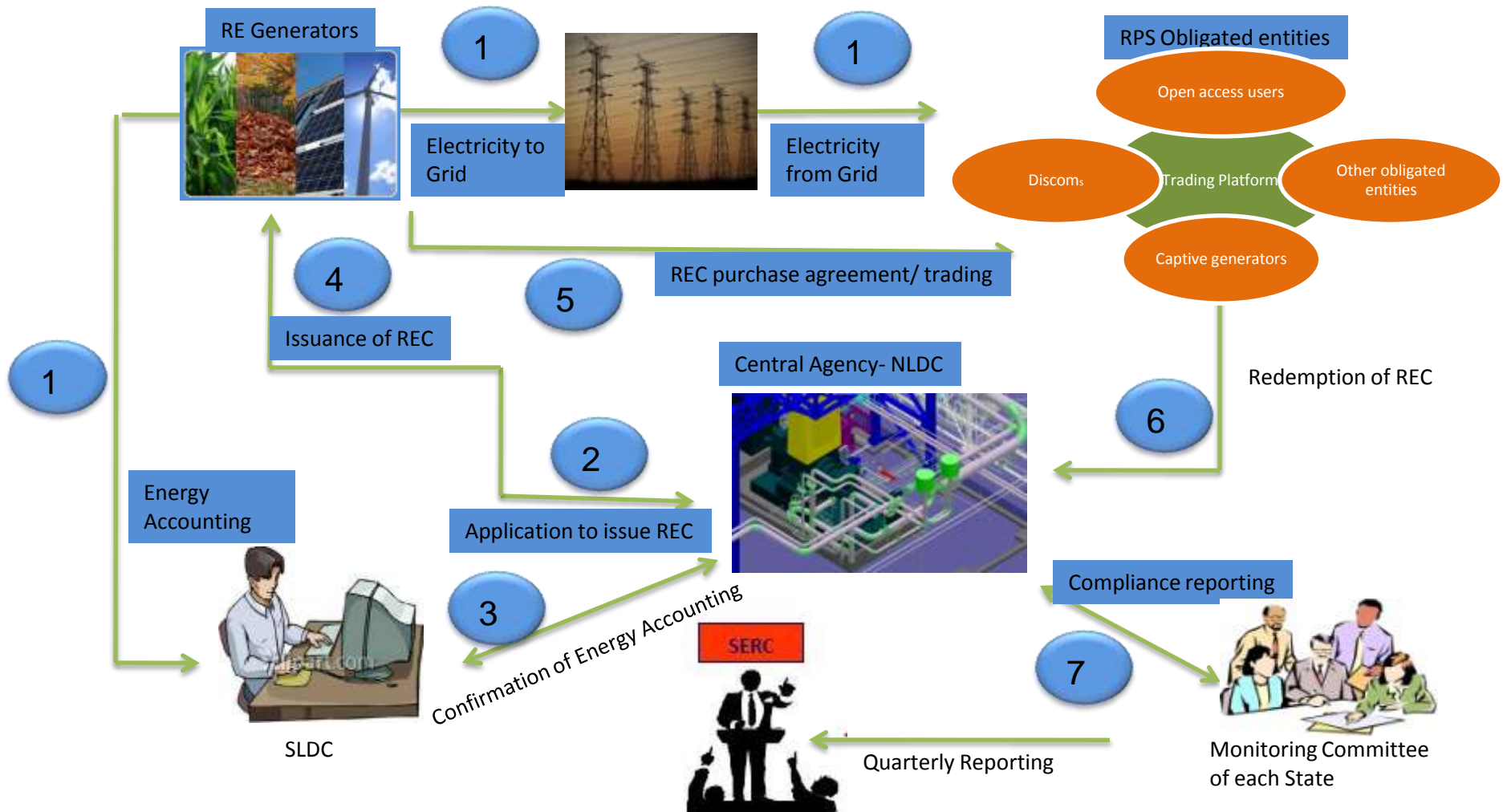
Owner Details, RE Generating Station details, Certificate of Accreditation

Commissioning Schedule, Details of Fee & Charges, Declaration

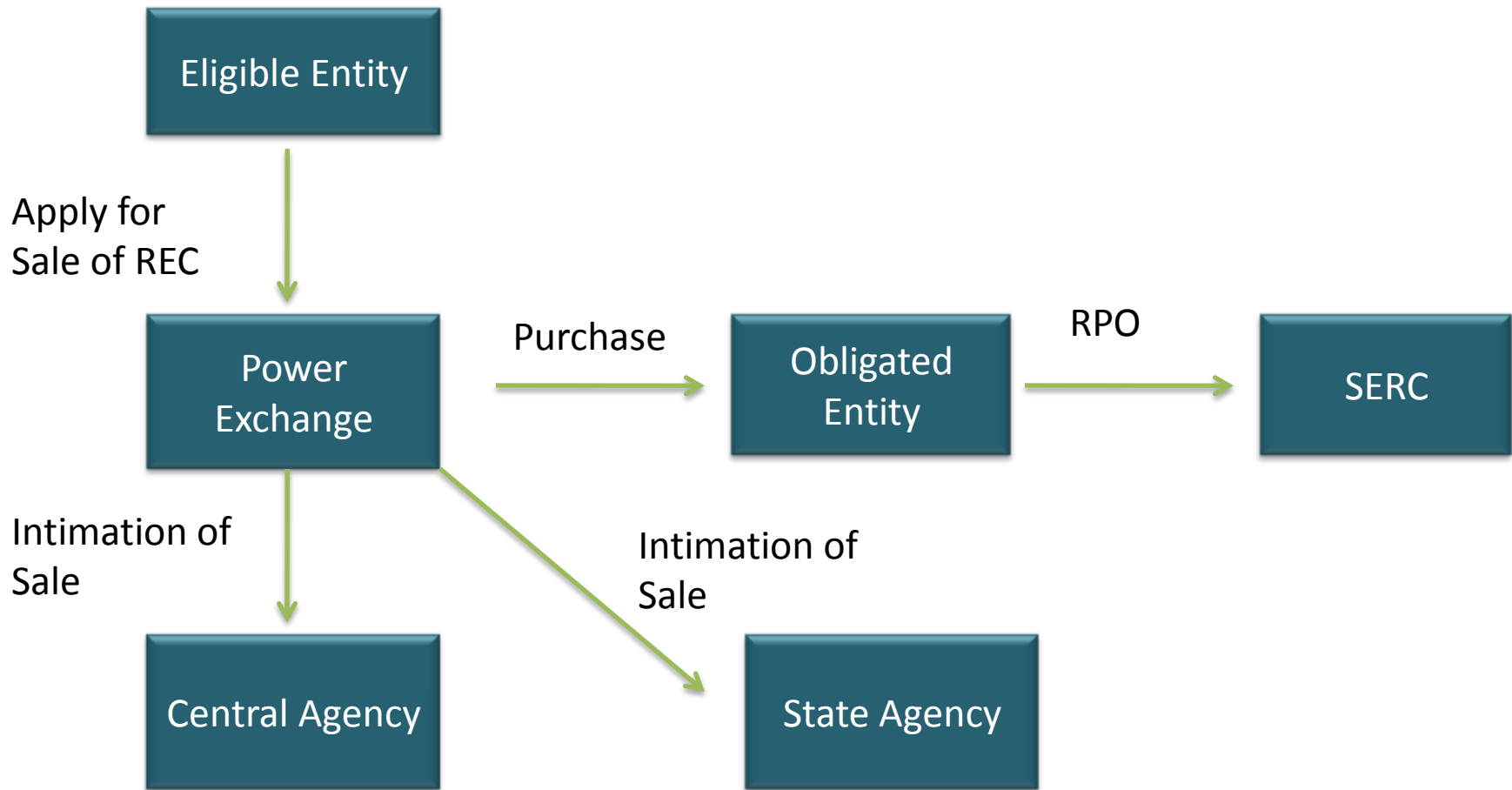
# Issuance of REC Process



# REC Trading



# Redemption Process



# Regulatory Provisions

## **First Amendment in REC Regulations:**

- A generating company having entered into PPA for sale of electricity at Preferential Tariff shall not, in case of pre-mature termination of the agreement be, eligible for participating in the Renewable Energy Certificate (REC) scheme for a period of three years from the date of termination of such agreement or till the scheduled date of expiry of power purchase agreement whichever is earlier, if any order or ruling is found to be passed by an Appropriate Commission or a competent court against the generating company for material breach of the terms and conditions of the said power purchase agreement.
- Captive Power Producer (CPP) based on renewable energy sources shall be eligible for the entire energy generated from such plant including self consumption for participating in the REC schemes



# Regulatory Provisions

## Second Amendment in REC Regulations:

### **Eligibility and Registration of Certificate:**

- Renewable energy contracted through competitive bidding is not eligible under REC Mechanism
- Co-generation plants (CGP) for their captive generation are eligible for registration under REC mechanism only upto connected load capacity for issuance of irrespective of the PPA
- Sale to distribution licensee at "at the pooled cost of power purchase"
- Captive Generating plants who are availing the benefit of Electricity duty, now eligible to take benefit under REC Mechanism
- RE generator who sells electricity to an entity for compliance of its RPO is not eligible under REC Mechanism

# Regulatory Provisions (Cont.)

## Second Amendment in REC Regulations

### Issuance of Certificates

- The eligible entity shall apply to the Central Agency for certificates within six months from the corresponding generation
- Application for issuance of RECs may be made 3 times in a month
- After registration, the RE gen. shall be eligible for issuance of RECs from the date of commercial operation or from the date of registration by Central Agency whichever is later.
- RECs shall remain valid for 730 days from the date of issuance.
- Revocation of RECs/recovery of sale proceeds of RECs of those RE generators who have registered their projects on false information

### Self-Retention of RECs

- An RE Generator permitted to retain the certificates for offsetting its RPO as a consumer subject to certification and verification by the concerned State Agency

# Regulatory Provisions

## Third Amendment in REC Regulations

- **Shelf-life of RECs** extended from 730 days to 1095 days
- **Incentive to DISCOMs** to procure beyond RPO target - DISCOMs eligible to receive RECs
- **Vintage multiplier factor of 2.66** for Solar Generators which have registered prior to 1st Jan 2015
- **Solar RECs-** floor and forbearance prices reduced

	01.04.2012-31.12.2014	01.01.2015 - 31.03.2017
Forbearance Price(Rs./REC)	13400	5800
Floor Price(Rs./REC)	9300	3500

# Floor and Forbearance Price

	<b>Non-Solar (Rs./MWh)</b> w.e.f. - 01.04.12 - 31.03.17	<b>Solar (Rs./MWh)</b> w.e.f. - 01.01.15 - 31.03.17
<b>Forbearance Price</b>	<b>3300</b>	<b>5800</b>
<b>Floor Price</b>	<b>1500</b>	<b>3500</b>

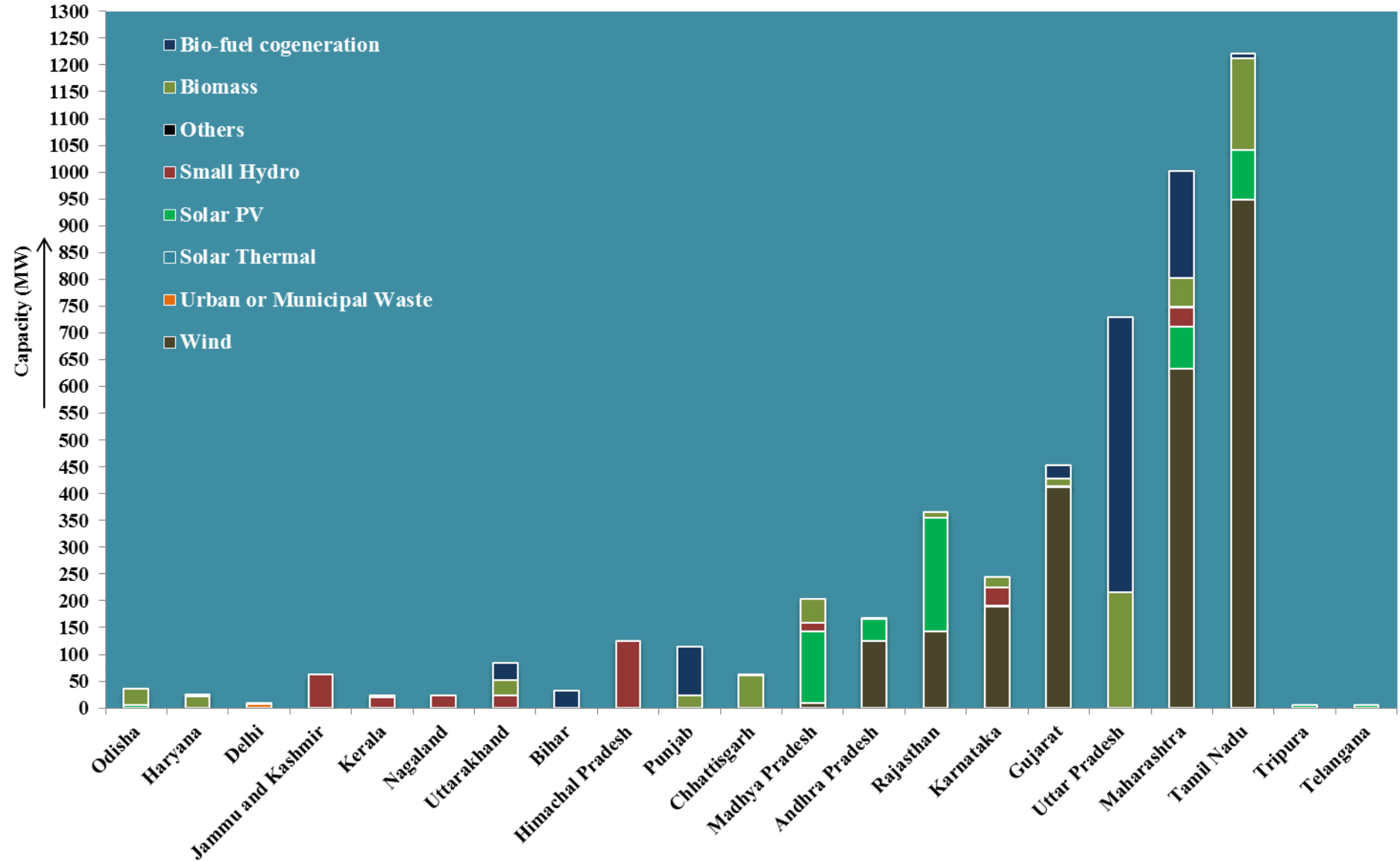
# Provision for CA in CERC REC Regulations

## **Clause No. 13- Appointment of compliance auditors**

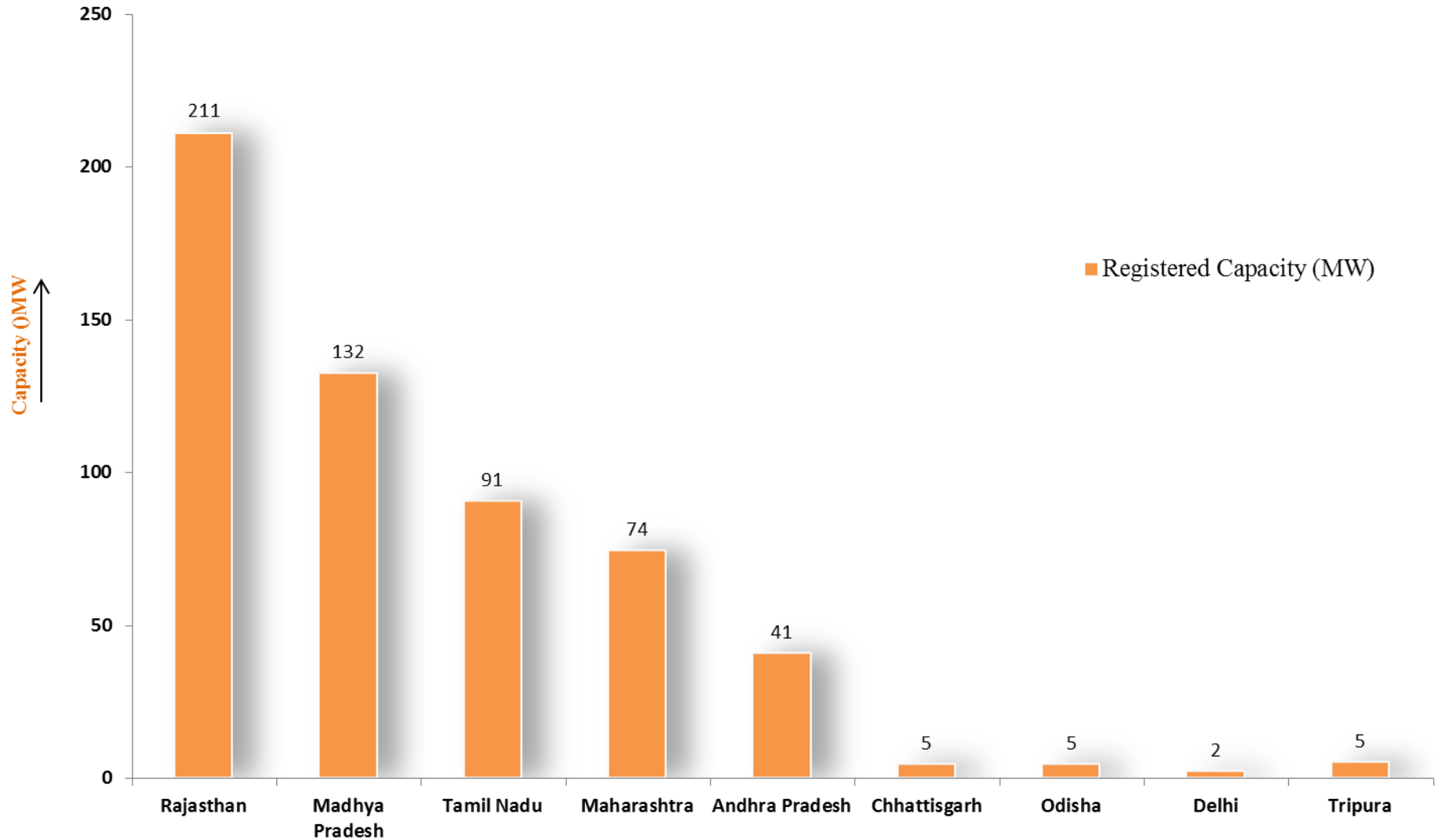
- **The Commission may, in consultation with the Central Agency, appoint from time to time compliance auditors to inquire into and report on the compliance of these Regulations by the person applying for registration, or on the compliance by the renewable energy generators in regard to the eligibility of the Certificates and all matters connected thereto.**
- **The compliance auditor shall have the qualifications and experience as contained in the Schedule to these Regulations: Provided that the Commission may by order amend the Schedule from time to time.**
- **The Commission may from time to time fix the remuneration and charges payable to such auditors and all such amount payable shall be met out of the funds which the Central Agency may collect from the eligible entities.**

- **REC- Current Status**

# State and Fuel-Source wise Accreditation Status Capacity (MW) on 31-Mar-2015

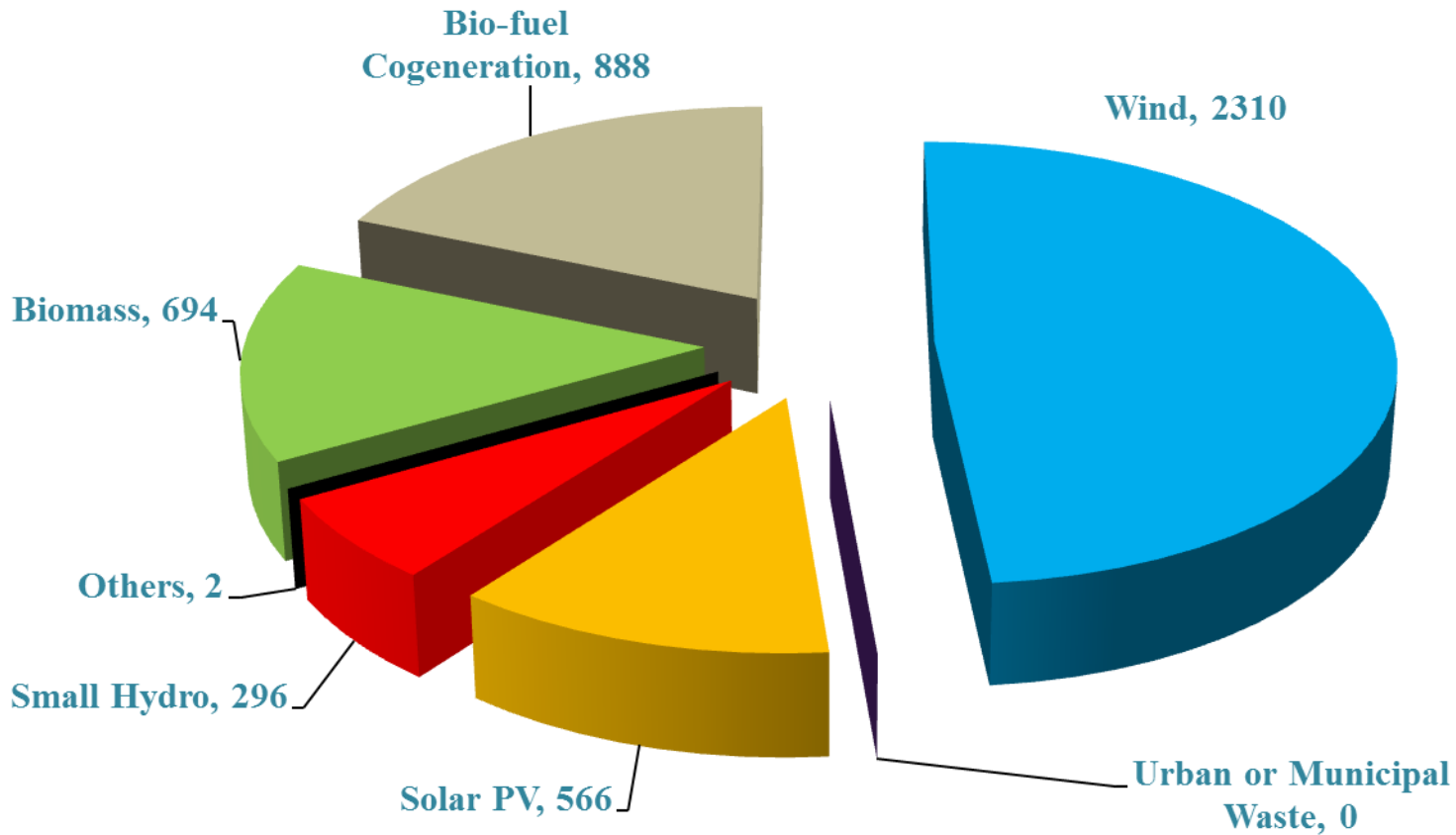


## Registered Solar Capacity (MW)





**Total Installed Capacity under REC Registration (MW) = 4,979**

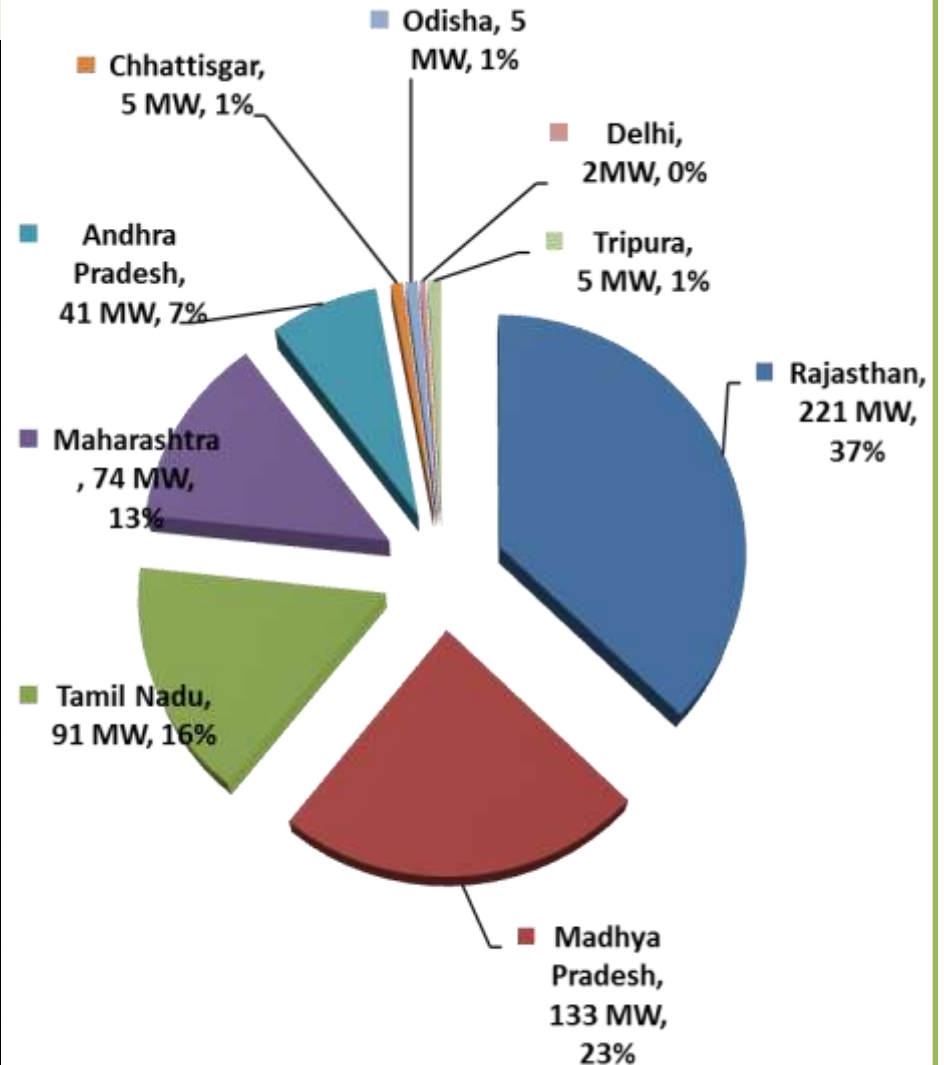


■ Wind ■ Urban or Municipal Waste ■ Solar PV ■ Small Hydro ■ Others ■ Biomass ■ Bio-fuel Cogeneration

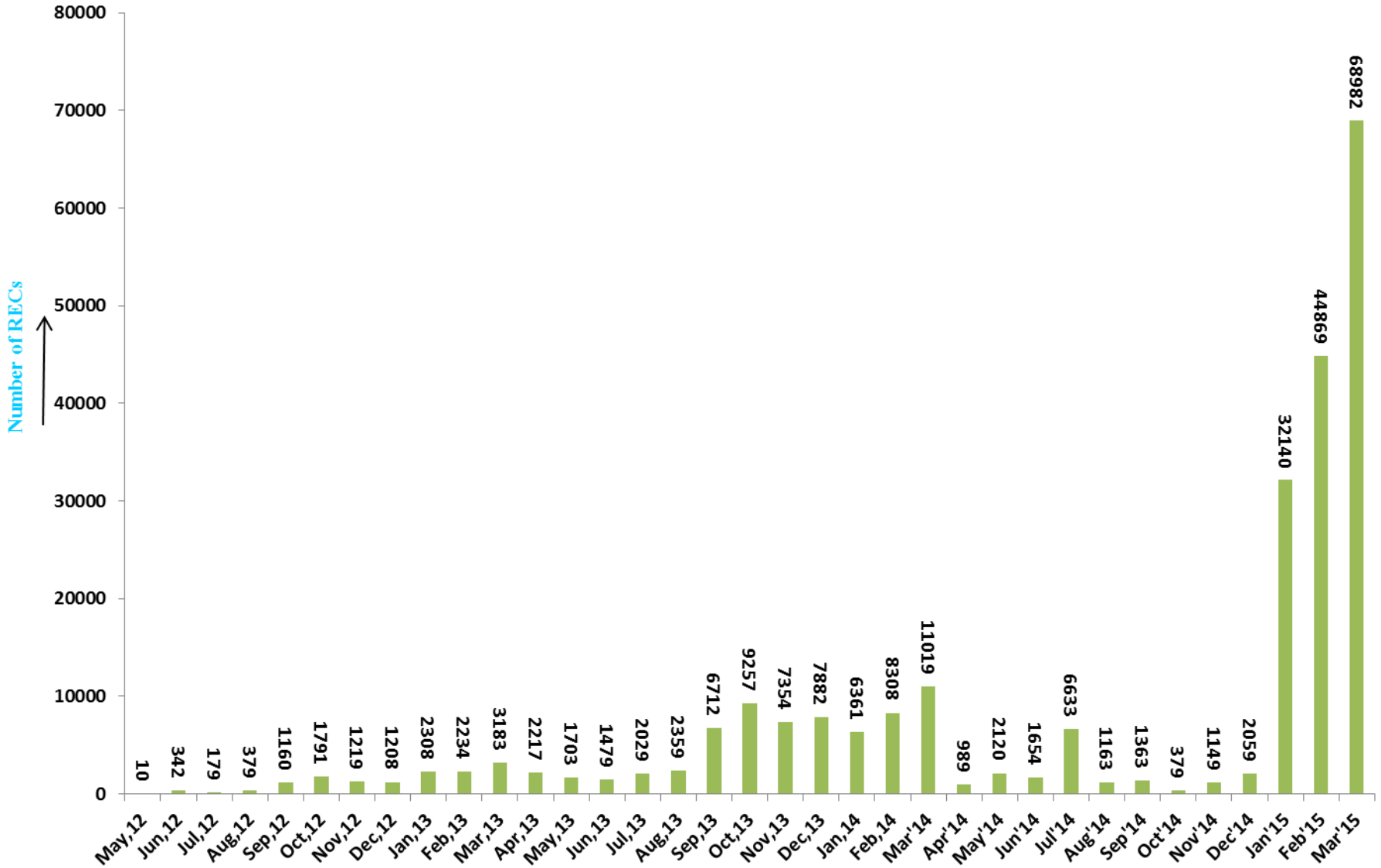
# Solar PV Projects Registered Under REC Mechanism

## Details of Solar PV Projects

S. No.	State	Registered Capacity (MW)	No. of Projects
1	Rajasthan	211	88
2	Madhya Pradesh	133	76
3	Tamil Nadu	91	42
4	Maharashtra	74	48
5	Andhra Pradesh	41	9
6	Chhattisgarh	5	3
7	Odisha	5	2
8	Delhi	2	1
9	Tripura	5	1
	<b>Total</b>	<b>562</b>	<b>270</b>

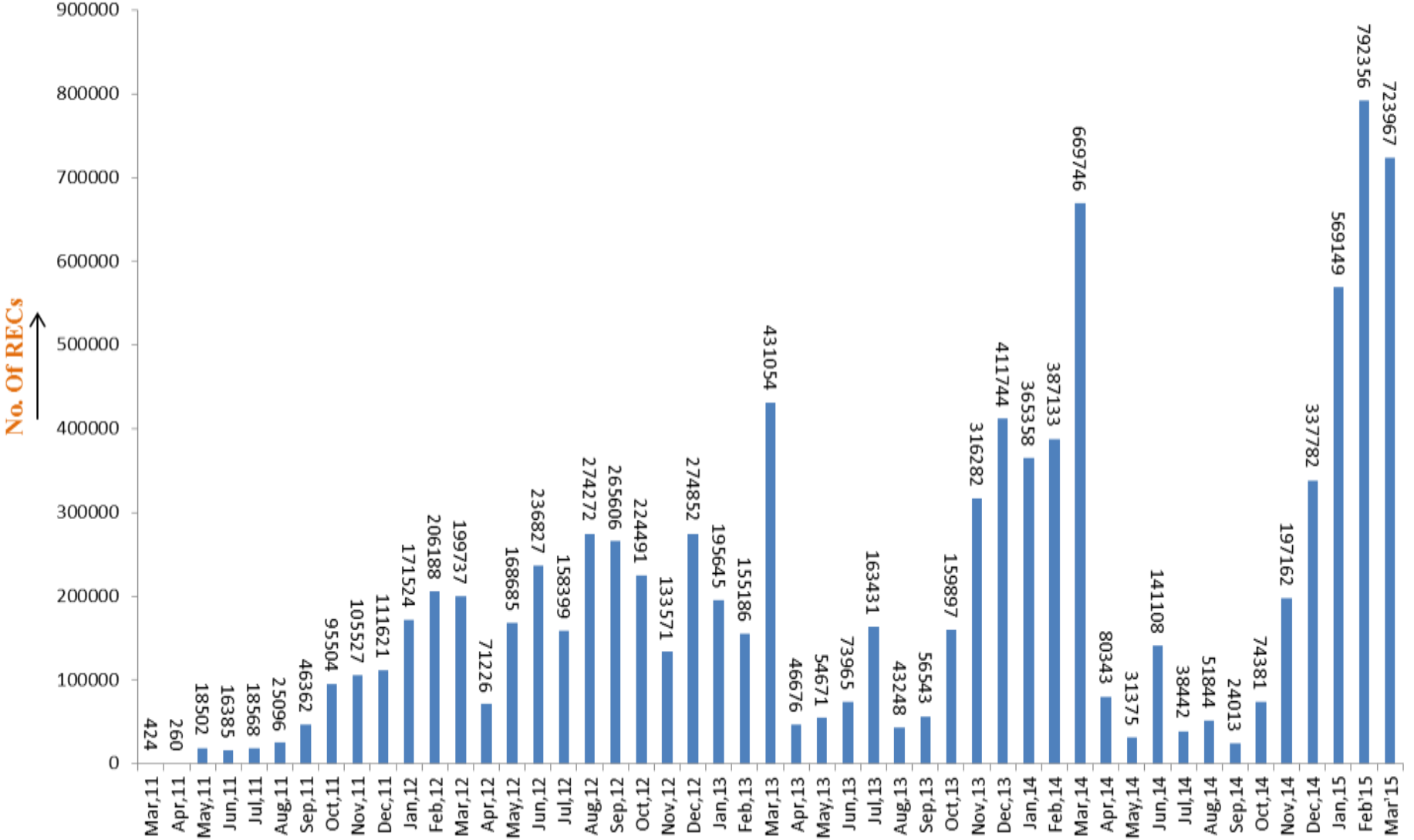


## No. of Traded Solar Recs Increased After Reduction of Floor Price



# Monthly RECs Traded

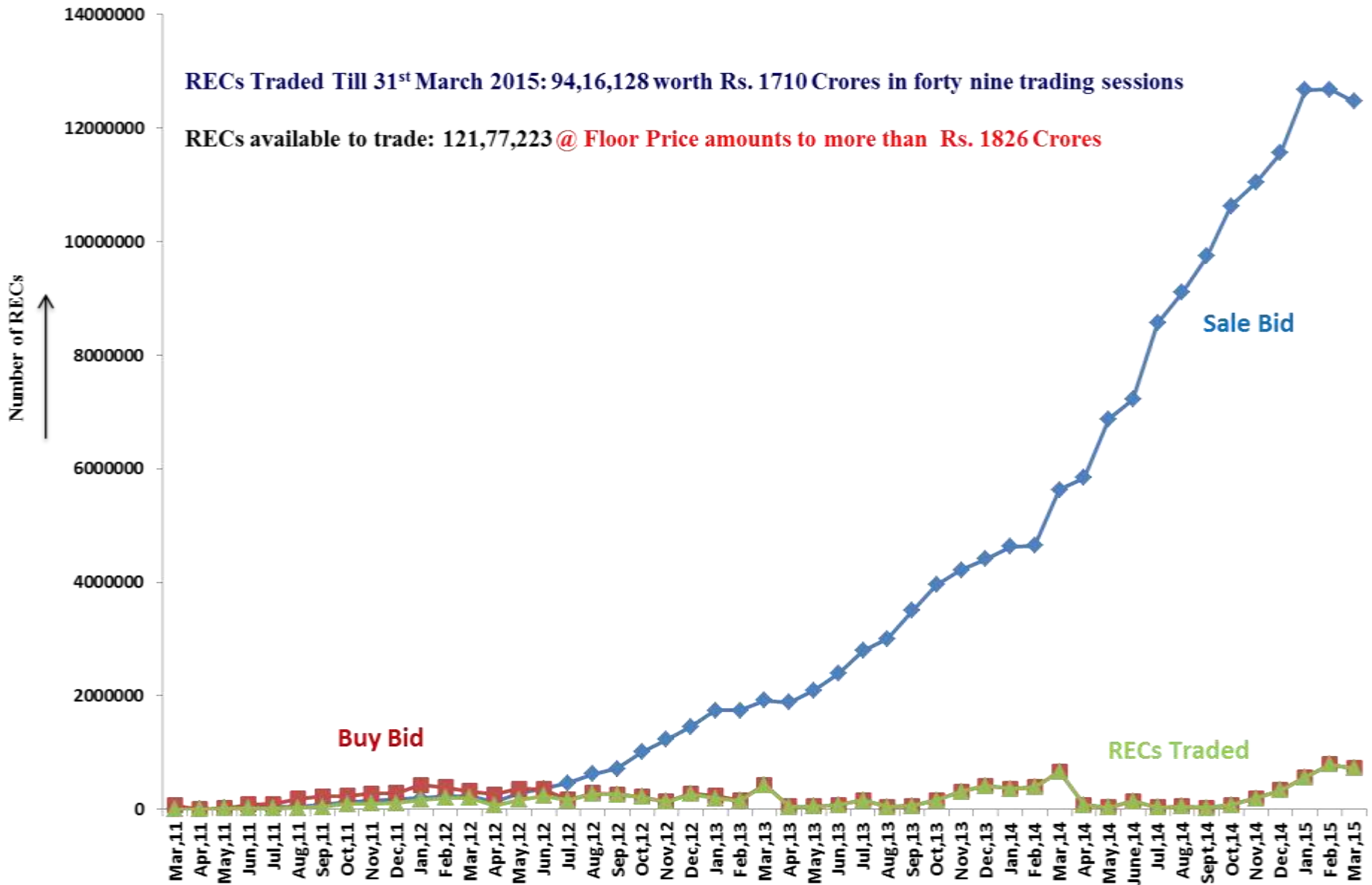
## Total RECs Traded = 94,16,128



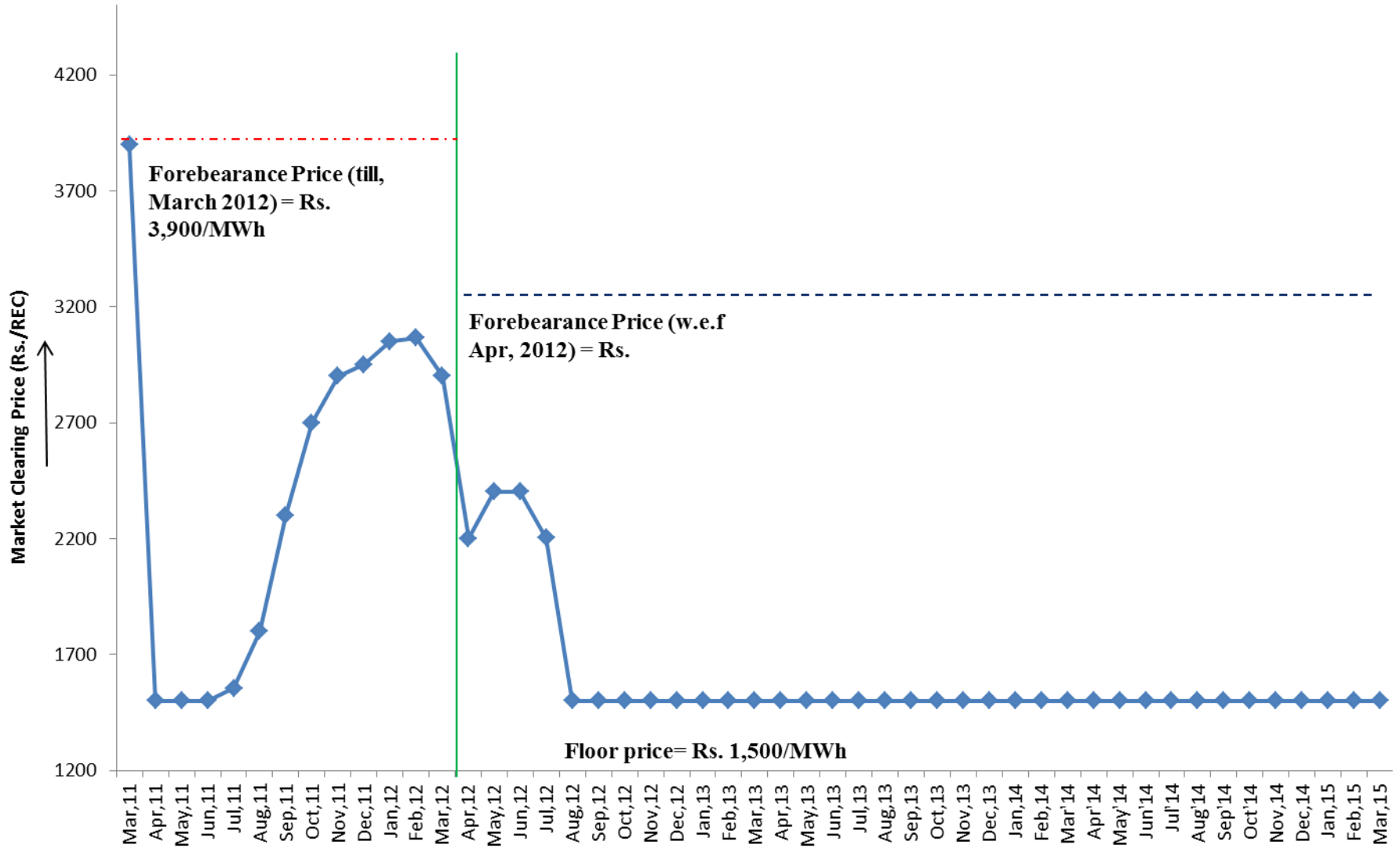
# REC Trading Details

RECs Traded Till 31<sup>st</sup> March 2015: 94,16,128 worth Rs. 1710 Crores in forty nine trading sessions

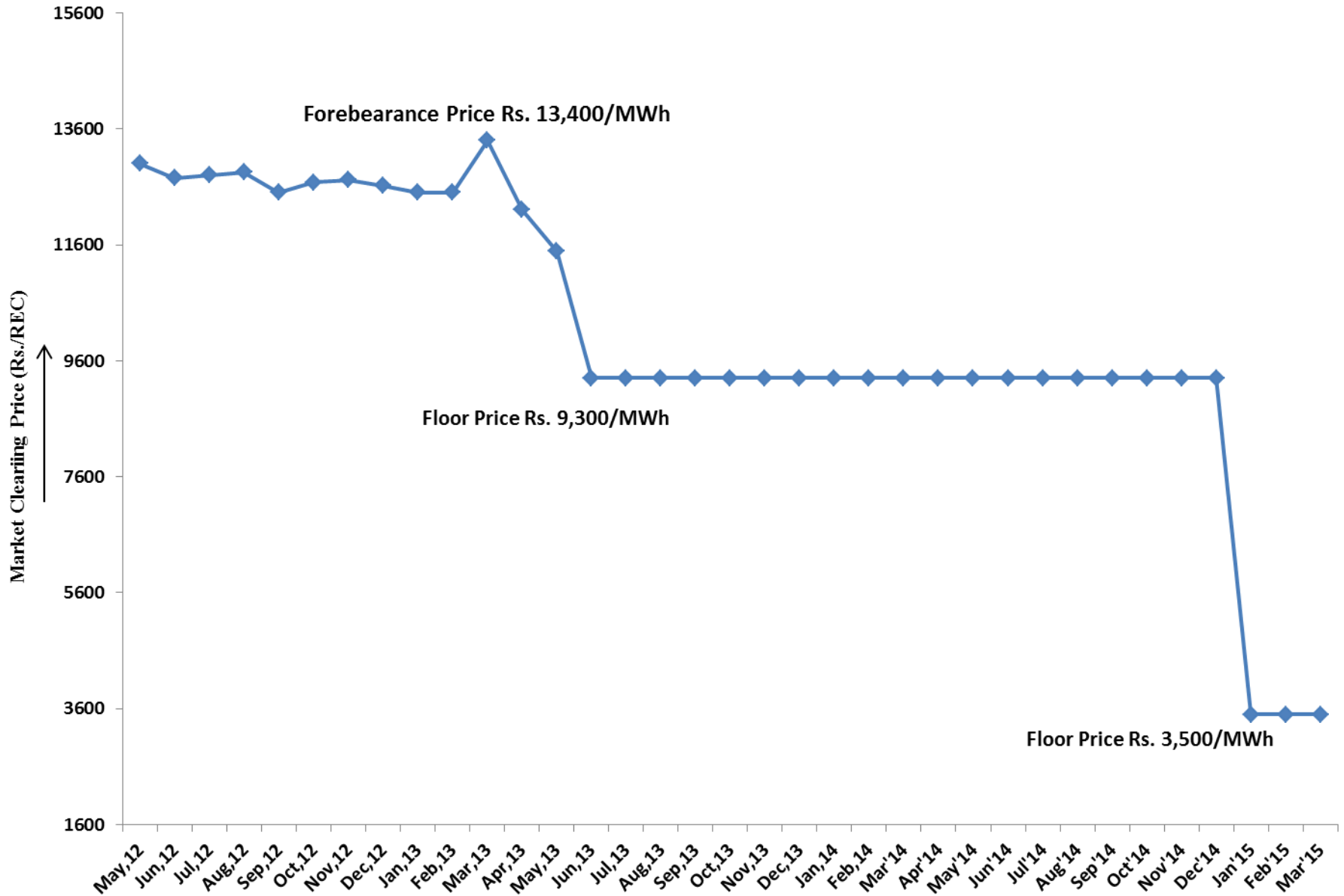
RECs available to trade: 121,77,223 @ Floor Price amounts to more than Rs. 1826 Crores



# Prices Discovered Non-Solar

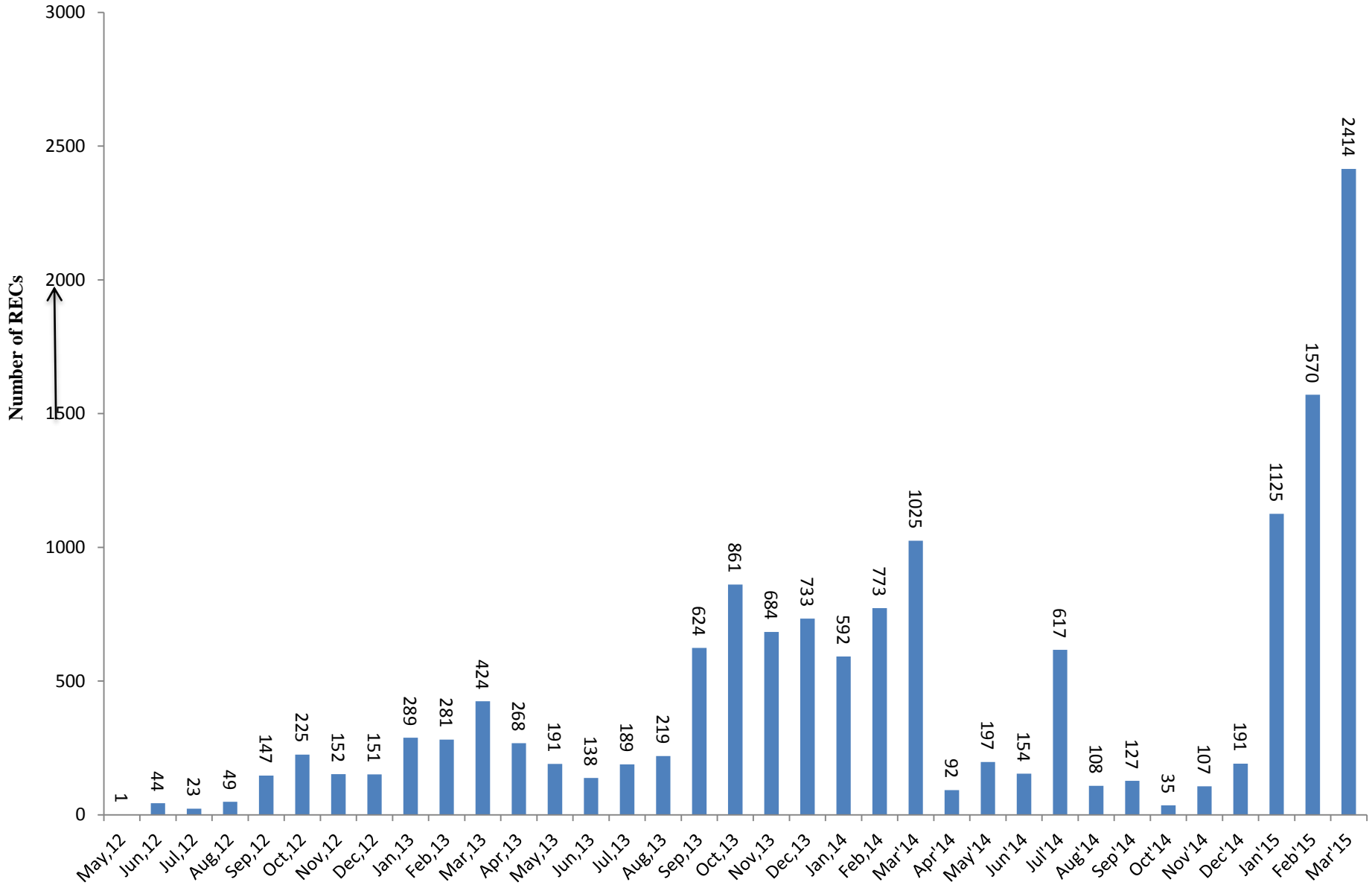


# Prices Discovered for Solar



# Transaction Value

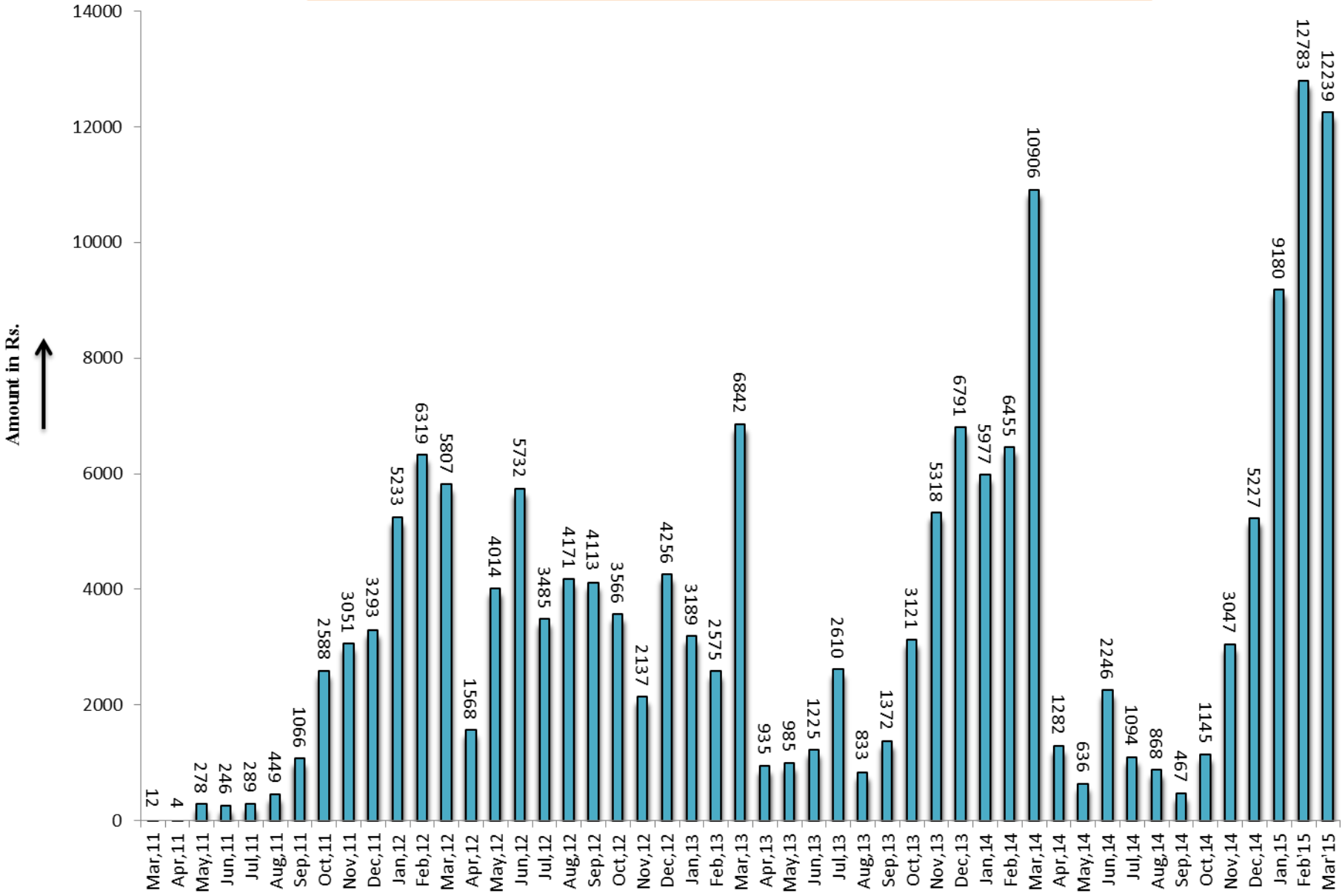
Total Solar RECs Traded ~ Rs. 148 Crores





## Transaction Value

Total Value of Transaction upto Mar'15 ~ Rs. 1710 Crores



## RECs Purchased by Obligated Entities in FY- 2014-15

Non-Solar RECs			Solar RECs		
S.no	State	No. of RECs Purchased	S.no	State	No. of RECs Purchased
1	Andhra Pradesh	63,559	1	Andhra Pradesh	3,147
2	Assam	62,500	2	Assam	19
3	Chandigarh	36,600	3	Chandigarh	7,150
4	Chhattisgarh	88,072	4	Chhattisgarh	12,651
5	Dadra and Nagar Haveli	85,674	5	Dadra and Nagar Haveli	30,150
6	Daman and Diu	88,215	6	Daman and Diu	2,594
7	Delhi	1,376	7	Delhi	598
8	Goa	85,000	8	Gujarat	1,955
9	Gujarat	775,455	9	Haryana	30
10	Haryana	1,201	10	Himachal Pradesh	131
11	Himachal Pradesh	2,016	11	Jharkhand	52,000
12	Jharkhand	52,866	12	Karnataka	5
13	Karnataka	64,840	13	Madhya Pradesh	5,265
14	Madhya Pradesh	40,303	14	Maharashtra	15,521
15	Maharashtra	959,614	15	Mizoram	1,055
16	Odisha	58,262	16	Odisha	2,468
17	Pondicherry	90,690	17	Pondicherry	18,000
18	Punjab	38,890	18	Punjab	2,154
19	Rajasthan	138,666	19	Rajasthan	6,901
20	Tamil Nadu	22,338	20	Tamil Nadu	101
21	Telangana	3,951	21	Telangana	228
22	Uttar Pradesh	3,328	22	Uttar Pradesh	1,264
23	Uttarakhand	133,540	23	Uttarakhand	113
24	West Bengal	1,466		<b>Total</b>	<b>163,500</b>
	<b>Total</b>	<b>2,898,422</b>			

# Weblinks

- [www.recregistryindia.in](http://www.recregistryindia.in)
- [www.cercind.gov.in](http://www.cercind.gov.in)
- [www.forumofregulators.gov.in](http://www.forumofregulators.gov.in)
- [www.mnre.gov.in](http://www.mnre.gov.in)
- [www.iexindia.com](http://www.iexindia.com)
- [www.powerexindia.com](http://www.powerexindia.com)

# Thank You

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