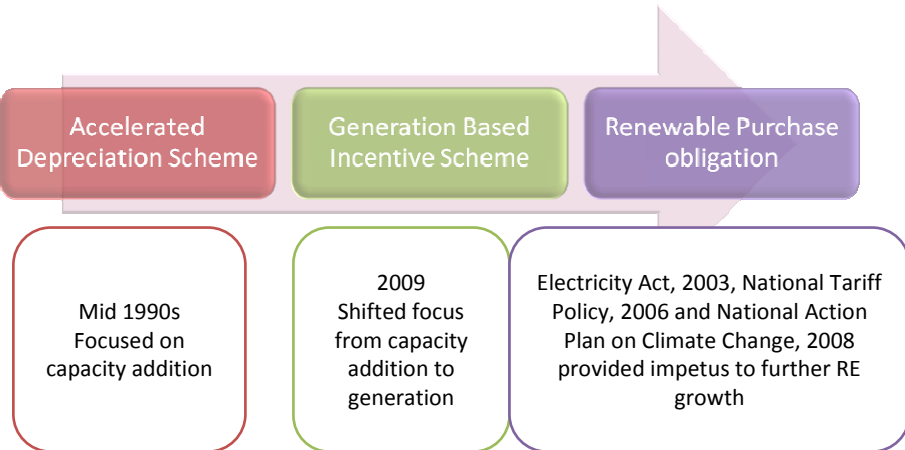


Renewable Power Purchase Obligation and REC Trading in India

Devesh Singh – Regional Head (SR)
 Email: devesh.singh@iexindia.com

Oct'14

Schemes to promote RE in the country



Accelerated Depreciation Scheme	Generation Based Incentive Scheme	Renewable Purchase obligation
Mid 1990s Focused on capacity addition	2009 Shifted focus from capacity addition to generation	Electricity Act, 2003, National Tariff Policy, 2006 and National Action Plan on Climate Change, 2008 provided impetus to further RE growth

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Introduction to REC Mechanism

REC Genesis: Separating green attribute from electricity

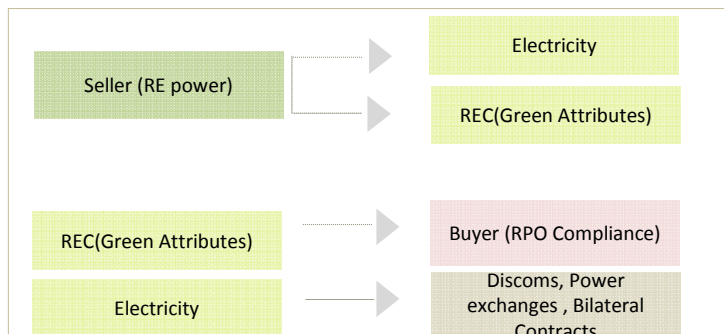
Bundled Green Power



Issues

- Schedulability
- Uncertainty
- Transmission Loss & Charge

Un-bundled Green Power



Solution

- No geographic barriers
- Reduced transaction cost
- Flexibility in meeting the RPO

Compliance Market: Overview of Legal Framework



2008 : National Action Plan on Climate Change (NAPCC)

- RPO at 5% in year 2010, increasing 1% every year for 10 years.
- Authorities may issue tradable certificates and penalties for shortfall

Jan'10 : CERC issued REC Regulation

- CERC designated National Load Despatch Centre (NLDC) as Central Agency; Notification dated 29.01.2010

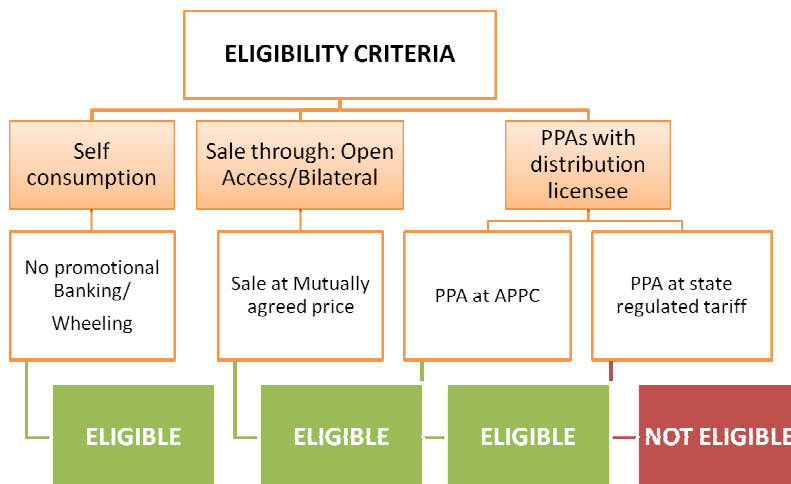
June'10 : CERC approved Procedures for Accreditation, Registration & Issuance

Sep'10: First amendment of REC Regulation

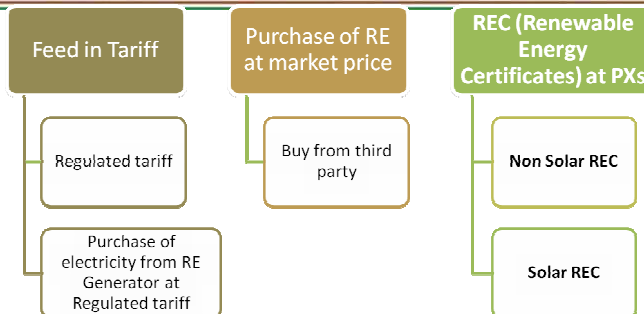
July'13: Second amendment to REC Regulation

- Amendment in eligibility, Self consumption and Validity period

REC Market Participants: Sellers/Eligible Entity



Mechanisms to fulfill compliance



Penalty for non compliance in the provisions

- If an obligated entity fails to comply with the RPO, it shall also be liable for **penalty as may be decided by the commission under section 142 of Electricity Act, 2003:**
- The Commission may direct the entity to deposit penal charges equivalent to the **forbearance price of REC multiplied by shortfall in units of RPO**

Salient Features of REC Mechanism



Participation	Voluntary
REC Denomination	1 REC = 1 MWh
Validity	730 Days after issuance (As per CERC order dated 11 th Feb'2013)
Categories	1. Solar REC 2. Non-Solar REC
Trading Platform	Power Exchanges only
Banking/Borrowing	Not Allowed
Transfer Type	Single transfer only , repeated trade of the same certificate is not possible
Floor Price (2012-17)*	Solar: Rs 9,300/MWh Non Solar: Rs 1,500/MWh
Forbearance Price (2012-17)*	Solar: Rs 13,400/MWh Non Solar: Rs 3,300/MWh
Penalty for Non-compliance	'Forbearance' Price (Maximum Price)
Price Guarantee	Through 'Floor' Price (Minimum Price)

*Reference :CERC in its order dated 23rd August, 2011 revised the floor & forbearance price for the period April, 2012 to March,2017

Trading at IEX

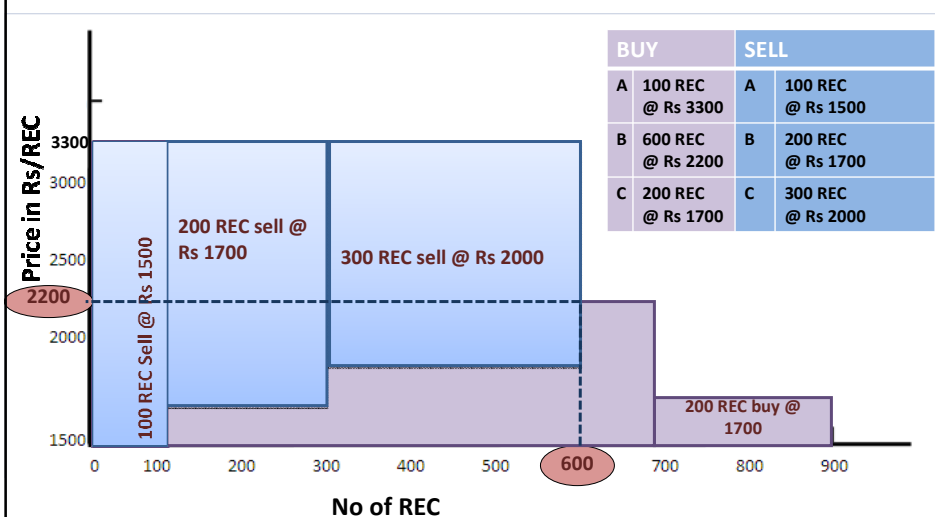


Trading Day	Last Wednesday of every Month
Market Clearing	Closed Double sided auction
Trading Time	1300-1500 Hrs
By 1530 Hrs	Verification by Central agency for Valid REC by cleared seller at IEX
By 1600 Hrs	Central agency confirms REC
By 1630 Hrs	IEX finalizes trade
By 1700 Hrs	Buyer & Sellers informed to Central Agency
By 1800 Hrs	Invoice raised (<i>proof of REC trade</i>)

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Cleared volume : 600 RECs

MCP: Rs 2200/REC



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Market Snapshot

An update on RECs

	Accredited Capacity (MW)	Registered Capacity (MW)	RECs Issued	RECs Traded	Balance
Non -Solar	4,360	4031	1,66,19,413	66,26,716	99,92,697
Solar	540	517	4,79,049	94,615	3,84,434

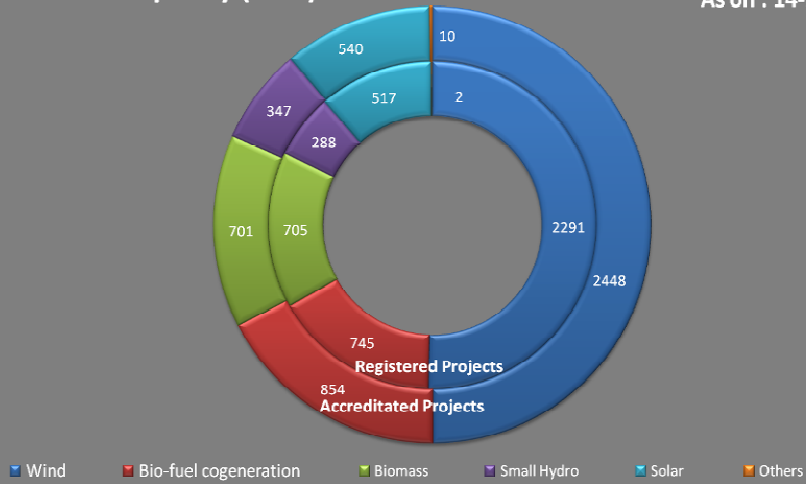
As on 14th Oct '2014

Projects under REC Mechanism



Source wise RE capacity (MW)

As on : 14-10-14



Source: REC registry India

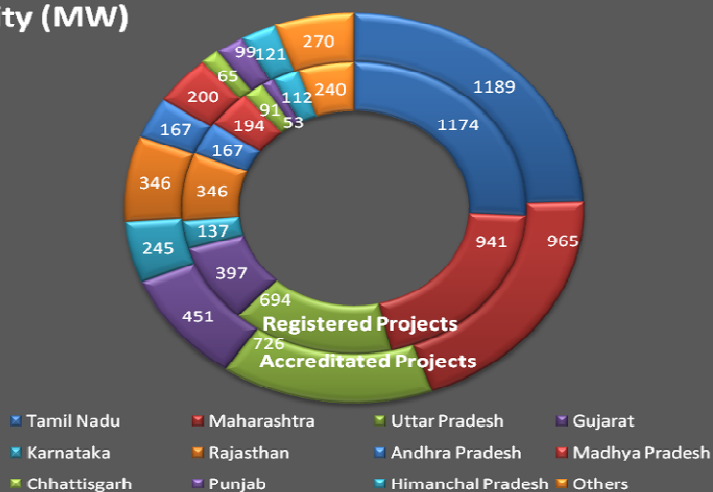
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Projects under REC Mechanism



State-wise RE Capacity (MW)

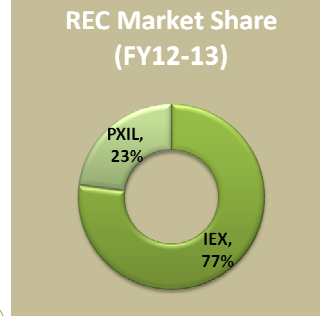
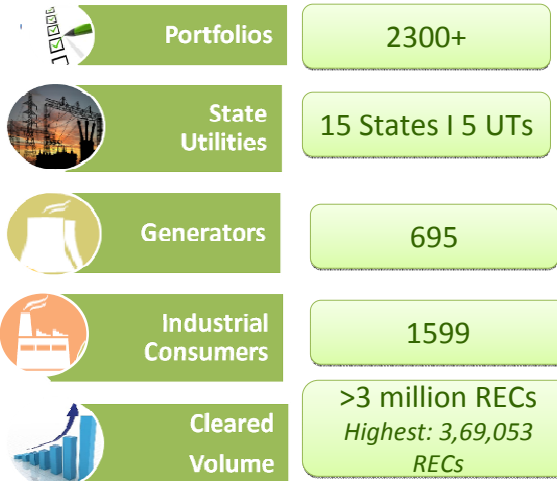
As on : 14-10-14



Source: REC registry India

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Key statistics: REC Market at IEX



IEX Data as on 14th Oct 2014

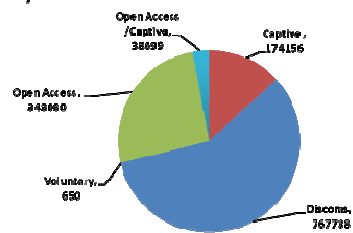
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Participation Details at IEX

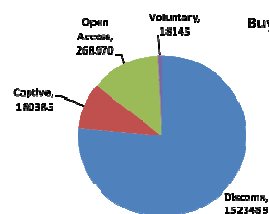


Registered Participants	2306
Obligated Entity	1599
DISCOMs	23
OA consumers	1492
Captive Consumer	62
OA + Captive	21
Discom + Captive	1
Voluntary	12
Eligible Entity (Sellers)	695

Buyer Mix FY '13-14



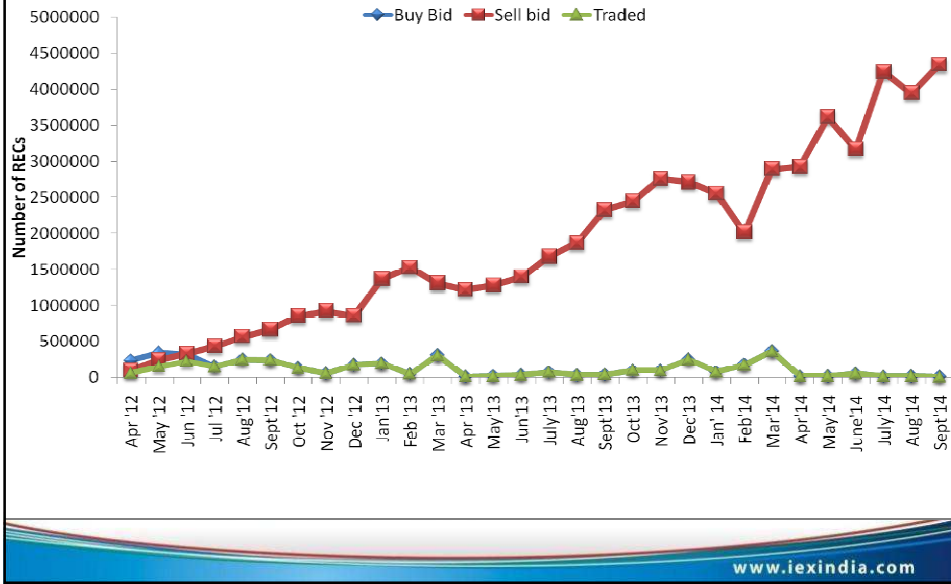
Buyer Mix FY'12-13



As on 30th Sept 2014

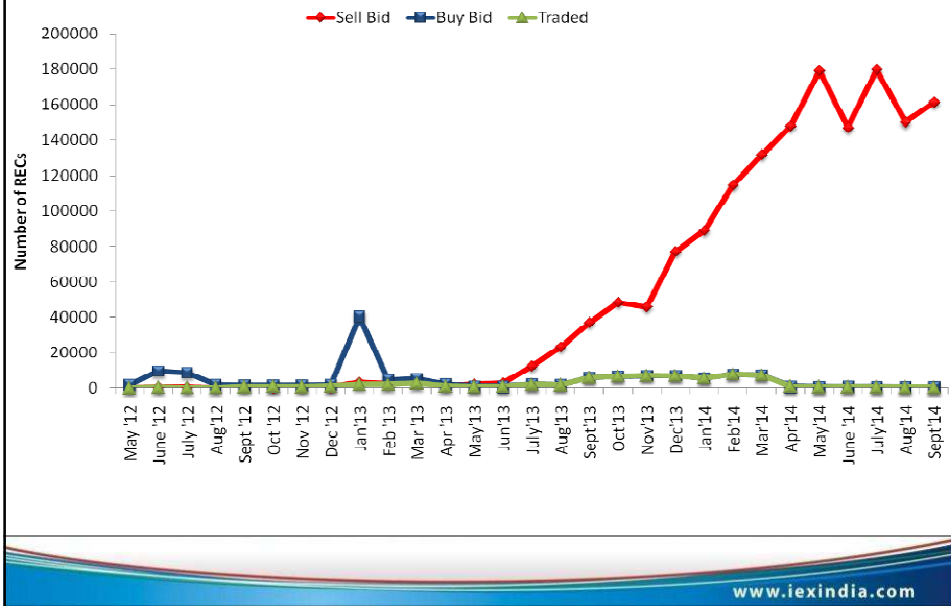
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Non Solar REC Trade details

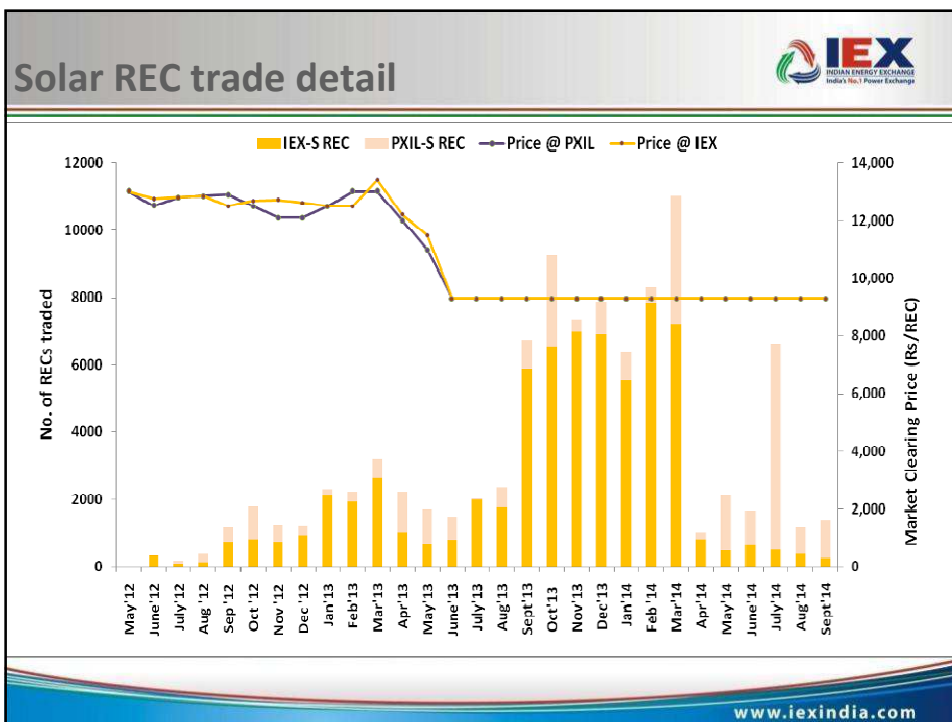
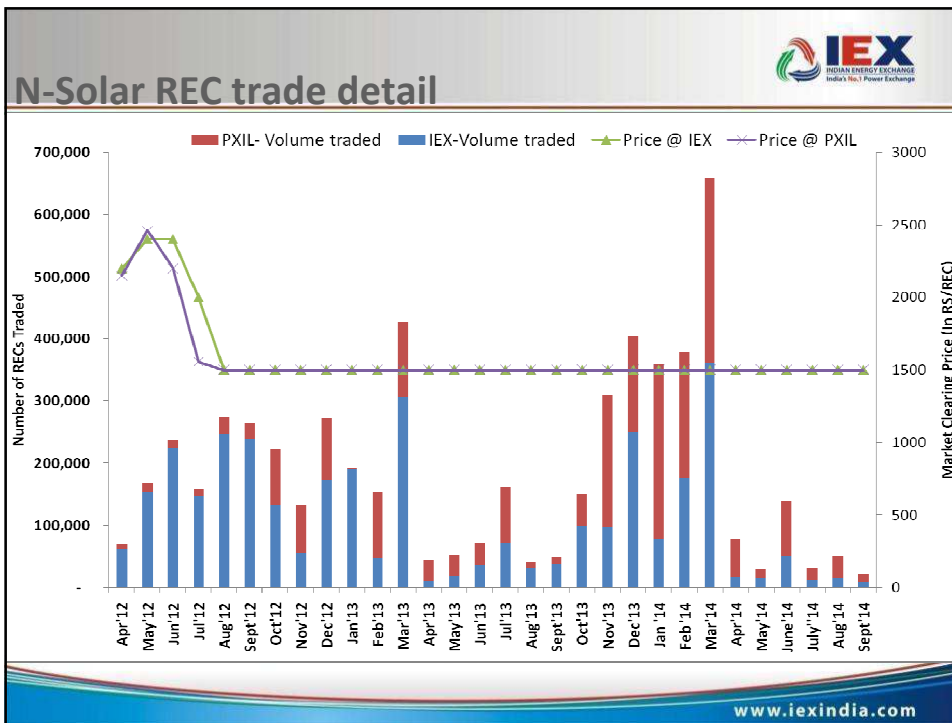


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Solar REC Trade details



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Why REC a better option than 'buying renewable power' ?



Schedulability

- Less predictable
- Less controllable
- Require better prediction tools over one-day
- Scheduling changes till one-hour before

High Overheads

- More System imbalances
- Discoms to spend on more reserves to avoid UI
- More reserves required to balance

Open Access costly

- Payment of Transmission, Wheeling Charges, Losses and Scheduling Charges to LDCs(50-100p/kWh) vis-à-vis 7p/kWh in RECs

RECs are better way to transfer green premium than green energy

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Strengthening RPO Compliance



- Introduce National Compliance Registry
- Improve REC Market Design
 - Vintage Based Multiplier for Solar Projects
 - Encourage States to buy green power over and above RPO
 - Introduce Minimum Guarantee Price
 - Stringent Penalty for non compliance under EA2003
 - Amend Sec-86(1)(e) to address the ambiguity between cogeneration from fossil fuel and RE
- Promote Voluntary REC Market
 - MNRE to launch a campaign to promote RECs among corporate and individuals as there exists a huge potential for REC trade from CSR
 - MNRE can promote green labeling and companies buying RECs can be given extra credits in government tenders

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