

REC Presentation

November 2011

Leader in Energy & Environmental Commodities



General Carbon

- Leading player in energy & environmental commodities



GE Energy



- Developing bilateral power contracts and providing advisory services for power market participants
- Developing renewable energy, energy efficiency, carbon offsets and sustainable development projects
- Operating across India, South East Asia and Africa

Energy

- Power sourcing/sales
 - Short, Medium & Long term contracts
 - Power Exchange based advisory services
- Regulatory and strategic support to provide a single-window approach
- Energy strategy
 - Assessing renewable purchase obligation and cost effective sourcing plan
 - Energy consumption and developing management plan



Environmental commodities

- Carbon offsets
 - 100 million CERs & 20 million VERs
 - Carbon offset projects across - India, Indonesia, Thailand, Sri Lanka, Nigeria, Ethiopia & Kenya
 - Fixed, floating, spot & exotic structures including upfront payment
 - Equity, Debt and mezzanine financing based on carbon credits
- Renewable Energy Certificates (RECs)
 - 100 MW of REC projects across India
 - Develop RECs through advisory and turnkey projects
- Energy efficiency certificates (EsCerts)
 - Engaging large clients to prepare for PAT
 - Integrate PAT and REC obligations to develop holistic compliance toolkit



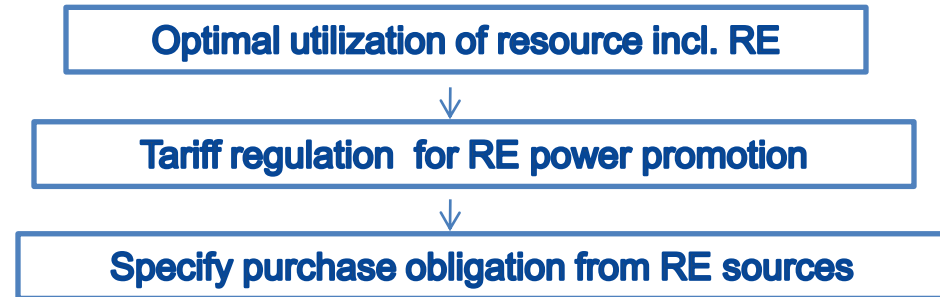
Our knowledge base

- Wind energy portfolio of > 1300 MW
 - Projects across TN, Karnataka, AP, Maharashtra, Gujarat and Rajasthan
- Natural gas portfolio of > 1000 MW
- Hydro portfolio of > 400 MW
- Biomass portfolio of > 150 MW
- Supercritical based portfolio of > 4000 MWs

What is RPO

- The Electricity Act & National Action Plan on Climate Change (NAPCC) provide roadmap for increasing renewable energy in total generation
- Renewable Purchase Obligation (RPO) is obligation mandated by SERC for promotion of renewable energy generation
- RPO is the minimum percentage of renewable energy share in the area of a
 - Distribution licensee
 - Open Access Consumer
 - Captive consumer

The Electricity Act, 2003



National Action Plan on Climate Change (NAPCC) – June 2008



RPO status – SERC Mandates

| State | FY11 | State | FY11 |
|--------------|--------------|--------------|--------|
| AP* | 5.00% | MP | 2.50% |
| Chhattisgarh | 5.5% | Maharashtra | 7.00% |
| Gujarat | 6.00% | Orissa | 5.00% |
| Haryana | 1.50% | Rajasthan | 9.50% |
| HP | 11.10% | Tamil Nadu | 9.00% |
| Karnataka | 7.25%-10.25% | UP | 5.00% |
| Kerala | 3.30% | Uttarakhand* | 4.525% |

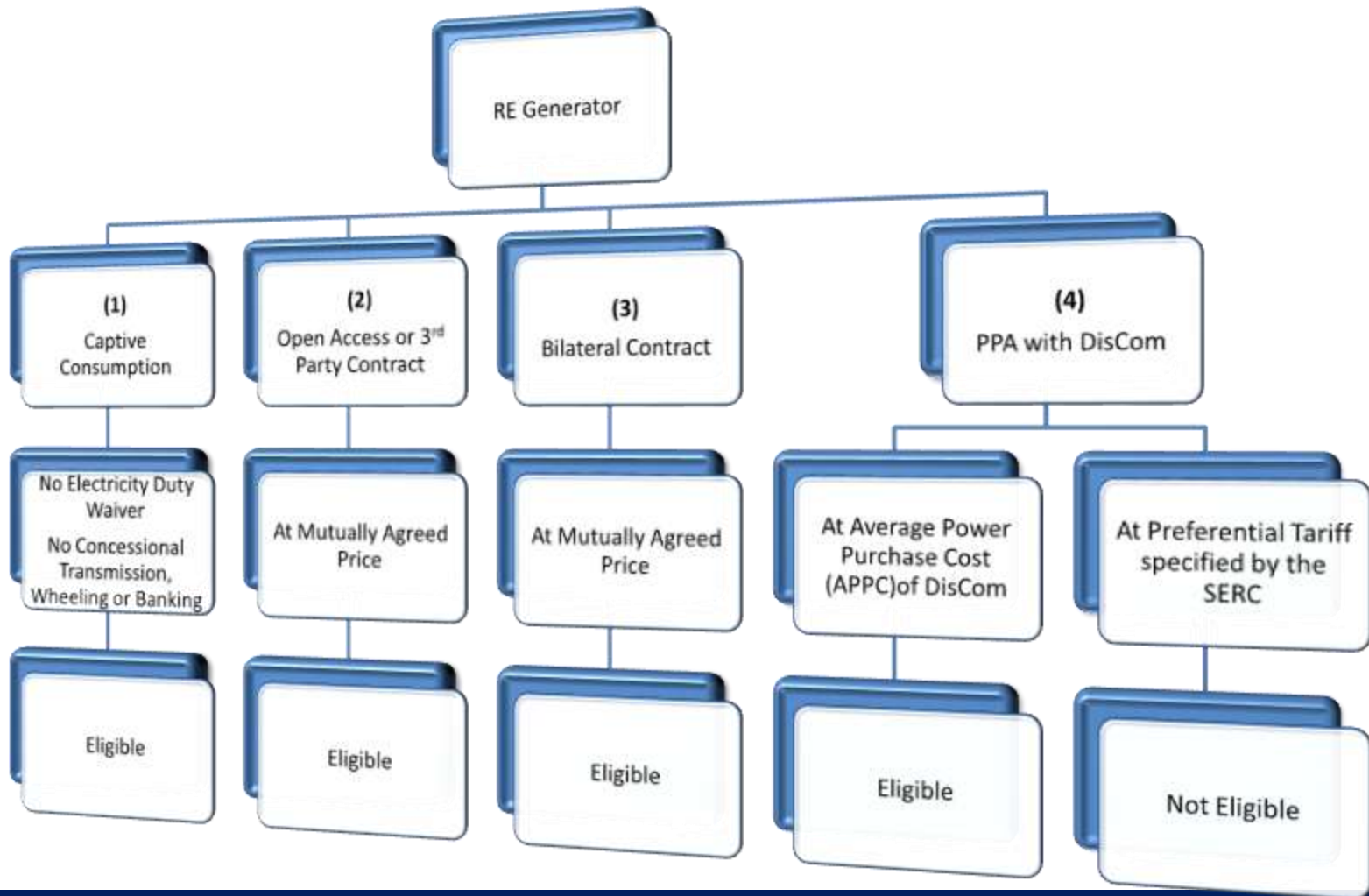
* Indicative (final awaited)

What is REC

- REC is a tradable certificate of proof that one MWh of electricity has been injected (or deemed to be injected) to grid by an RE generator
- REC types & Price band

| REC | Up to April 2012 | April 2012 - April 2017 |
|-----------|------------------|-------------------------|
| Non Solar | Rs 1500-3900 | Rs 1500-3300 |
| Solar | Rs 12000-17000 | Rs 9300-13400 |

Who is eligible to participate in REC?



Other eligibility terms

- Preferential tariff PPA
 - Not eligible for 3 years if they cancel PPA
 - Eligible if DISCOM cancels PPA or after expiry of PPA
- Captive consumption
 - Eligible if no promotional benefit
 - Concessional wheeling/transmission charges
 - Banking facility
 - Electricity duty waiver
 - Not eligible for 3 years even if generator foregoes benefits
 - Eligible if concessions are withdrawn by SERC

Other eligibility terms

- GBI and Accelerated depreciation benefits are not considered concessional
- Not available for off grid projects
- Auxiliary consumption not eligible

REC Vs Preferential Tariff (Wind)

| State | Preferential Tariff | APPC Tariff | GBI | CDM | Minimum with REC | Maximum with REC | Without REC |
|-------------|---------------------|-------------|-----|-----|------------------|------------------|-------------|
| Tamil Nadu | 3.39 | 2.37 | 0.5 | 0.6 | 4.97 | 7.37 | 4.49 |
| Maharashtra | 4.63 | 2.51 | 0.5 | 0.6 | 5.11 | 7.51 | 5.73 |
| Gujarat | 3.56 | 2.61 | 0.5 | 0.6 | 5.21 | 7.61 | 4.66 |
| Karnataka | 3.7 | 2.61 | 0.5 | 0.6 | 5.21 | 7.61 | 4.8 |
| AP | 3.5 | 2.52 | 0.5 | 0.6 | 5.12 | 7.52 | 4.6 |
| MP | 4.35 | 1.74 | 0.5 | 0.6 | 4.34 | 6.74 | 5.45 |
| Rajasthan | 4.22 | 2.6 | 0.5 | 0.6 | 5.2 | 7.6 | 5.32 |

* APPC tariff as per CERC SuoMotu 2011-12

Accreditation Process

1. Web based Application + Submission of information in physical form with the State Agency (SA) along with processing fee and accreditation charges
2. SA will undertake preliminary scrutiny of the application within 5 days of receipt
3. SA will intimate in writing if further information is needed
4. SA will evaluate the application based on 8 criteria
5. If Application fulfills the evaluation criteria, SA shall grant 'Certificate for Accreditation'. Else rejection is intimated.
6. State Agency will also intimate regarding the accreditation of particular RE generation project to:
 - Central Agency (NLDC)
 - Host SLDC
 - Local DisCom

Accreditation - Documentation & Evaluation

The application for accreditation shall contain

1. Owners details,
2. Operator details (in case the owner and operator are different legal entities),
3. Generating Station details,
4. Connectivity details with concerned licensee (STU/DISCOM),
5. Metering details,
6. Statutory Clearance details,
7. Undertaking of not having entered into PPA on preferential tariff for the capacity for which participation in REC scheme is sought as per the CERC REC Regulations and
8. Any other relevant information as per the format of application

The 8 criteria of evaluation in accreditation

1. Undertaking of 'Availability of Land' in possession for setting up generating station
2. Power Evacuation Arrangement permission letter from the host State Transmission Utility or the concerned Distribution Licensee, as the case may be
3. Confirmation of Metering Arrangement and Metering Location
4. Date of Commissioning of RE project for existing eligible RE Project or Proposed Date of Commissioning for new RE for accreditation
5. Undertaking regarding Off-take/Power Purchase Agreement
6. Proposed Model and Make for critical equipment (say, WTG, STG, PV Module) for the RE Project. Confirmation of compliance of critical equipment with relevant applicable IEC or CEA Standards
7. Undertaking for compliance with the usage of fossil fuel criteria as specified by MNRE
8. Details of application processing fees/accreditation charges

Registration Process

1. Web based Application + Submission of information in physical form with the Central Agency (NLDC) along with processing fee and registration charges
2. NLDC will undertake preliminary scrutiny of the Application within 5 days of receipt
3. NLDC will intimate in writing if further information is needed
4. NLDC will evaluate the application based on 4 criteria
5. If Application fulfills the evaluation criteria, SA shall grant 'Certificate for Registration'. Else rejection is intimated.
6. NLDC will also intimate regarding the accreditation of particular RE generation project to:
 - Host State Agency
 - Host SLDC
 - Power Exchanges

Registration - Documentation & Evaluation

The application for accreditation shall contain

1. Owner details
2. RE Generating Station details
3. Certificate of accreditation by the State Agency
4. Generating facility commissioning schedule
5. Any other relevant information as per the enclosed format

The 4 criteria of evaluation in accreditation

1. A Valid Certification of Accreditation by State Agency
2. Date of Commissioning or Proposed date of Commissioning or Commissioning Schedule for new projects.
3. Undertaking that it has not entered into any Power Purchase Agreement at preferential tariff as may be determined by the Appropriate Commission
4. Details of payment of registration fees/charges

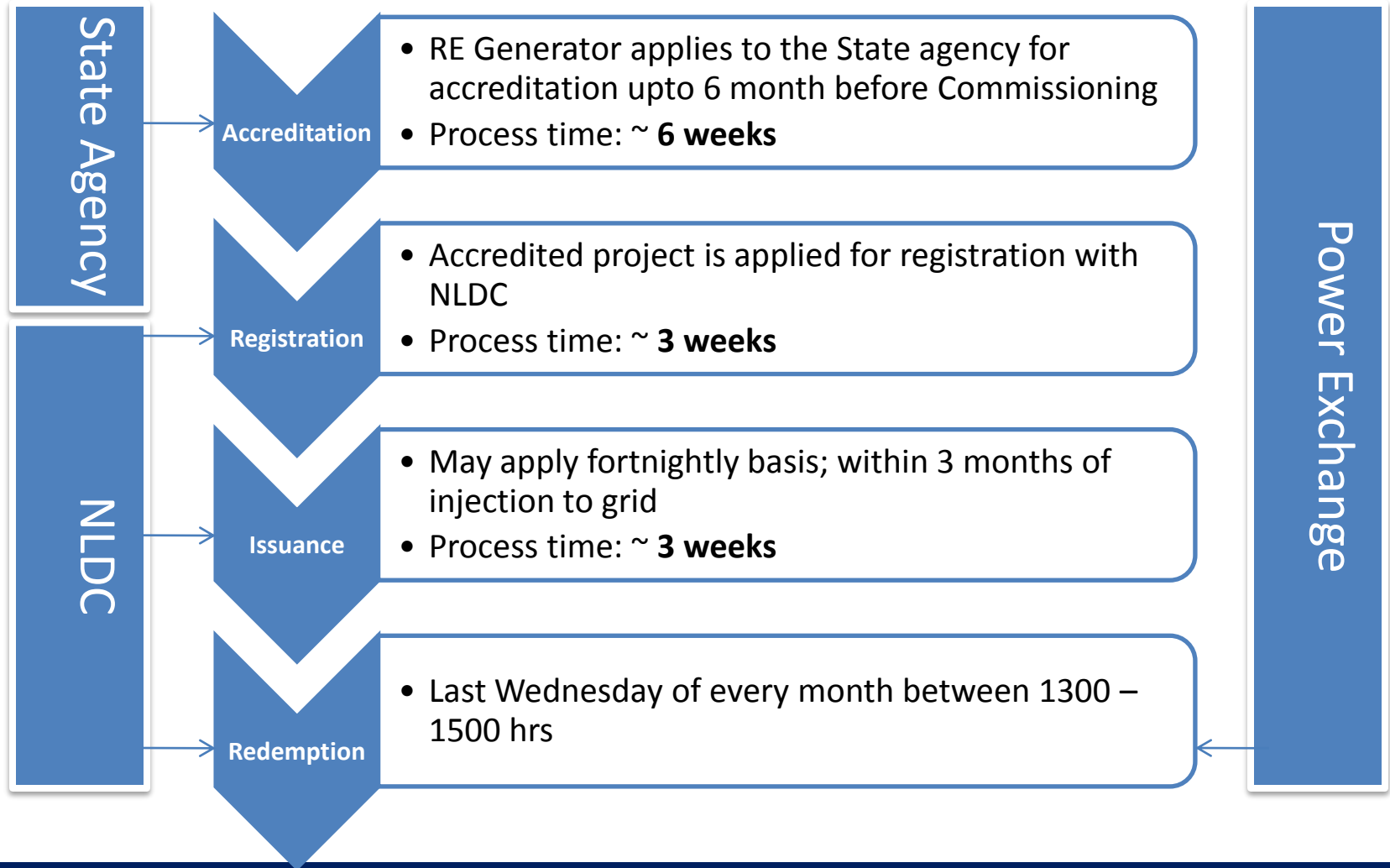
Issuance Process

1. Obtain Certification of Energy from SLDC on monthly basis
2. Application for issuance is possible on a fortnightly basis but within 3 months from the date of injection
3. Web based Application + Submission information in physical form with Central Agency (NLDC) along with Issuance fee
The application shall include: (i) Energy Injection Report - certified by the SLDC (ii) Registration Certificate
4. NLDC will undertake preliminary scrutiny of the Application within 2 days of receipt
5. NLDC will intimate in writing if further information is needed
6. NLDC will evaluate the application based on 4 criteria
 - Verification of the time period for which the NLDC may have already issued RECs
 - Verification of RECs claimed from the duly certified Energy Injection Reports by the SLDC
 - Details of fee & charges made for issuance of certificates.
 - Confirmation of Compliance Auditor report, if any.
7. If Application fulfills the evaluation criteria, SA shall issue 'Renewable Energy Certificates '. Else rejection is intimated.
8. NLDC will also intimate regarding the accreditation of particular RE generation project to:
 - Host State Agency

Redemption (Trading) Process

1. REC has a 365 days expiry period from the date of issuance within which it shall be traded
2. Registered RE Generator to have membership on the designated Power Exchange, else they should sell their RECs through a Trader Member (Eg. General Carbon)
3. Trading of RECs to take place on last Wednesday of every month.
4. During the time the bidding window opens place offer for dealing of RECs within the specified price band.
5. Buyers shall place their bids through the trading platform of the respective Power Exchange
6. On closure of the trading window, the Power Exchange shall send the maximum bid volumes for each of the eligible entity, which has placed offers on that Power Exchange, to the Central Agency for verification of the quantity of valid RECs
7. NLDC shall check the maximum bid volume against the quantity of valid RECs & confirm the availability of the valid RECs
8. The Power Exchange shall work out the Market Clearing Price and the Market Clearing Volume & send the final cleared trades to NLDC
9. RECs will be extinguished in the records of NLDC in the 'First-in-First-out' order

REC Process - Timeline



Process Costs

| Cost Head | Payable to | Cost Quantity (INR) |
|--|------------------------------|----------------------------------|
| Application processing fees | State Agency | 5,000 |
| One-time Accreditation Charge | State Agency | 30,000 |
| Annual Charge | State Agency | 10,000 |
| Accreditation Expenses | State Agency | 45,000 |
| Application processing fees | Central Agency (NLDC) | 1,000 |
| One Time Registration Charges | Central Agency (NLDC) | 5,000 |
| Annual Charges | Central Agency (NLDC) | 1,000 |
| Registration Expenses | Central Agency (NLDC) | 7,000 |
| Issuance fee | Central Agency (NLDC) | Rs. 10 per REC |
| Admission Fee | Power Exchange | Depends on Power Exchange |
| Interest Free Security Deposit | Power Exchange | Depends on Power Exchange |
| Processing Fee | Power Exchange | Depends on Power Exchange |
| Annual Subscription Fees | Power Exchange | Depends on Power Exchange |
| Annual Client Subscription Fee (each client) | Power Exchange | Depends on Power Exchange |
| Transaction Fees (Rs/REC) | Power Exchange | Depends on Power Exchange |

REC and CDM

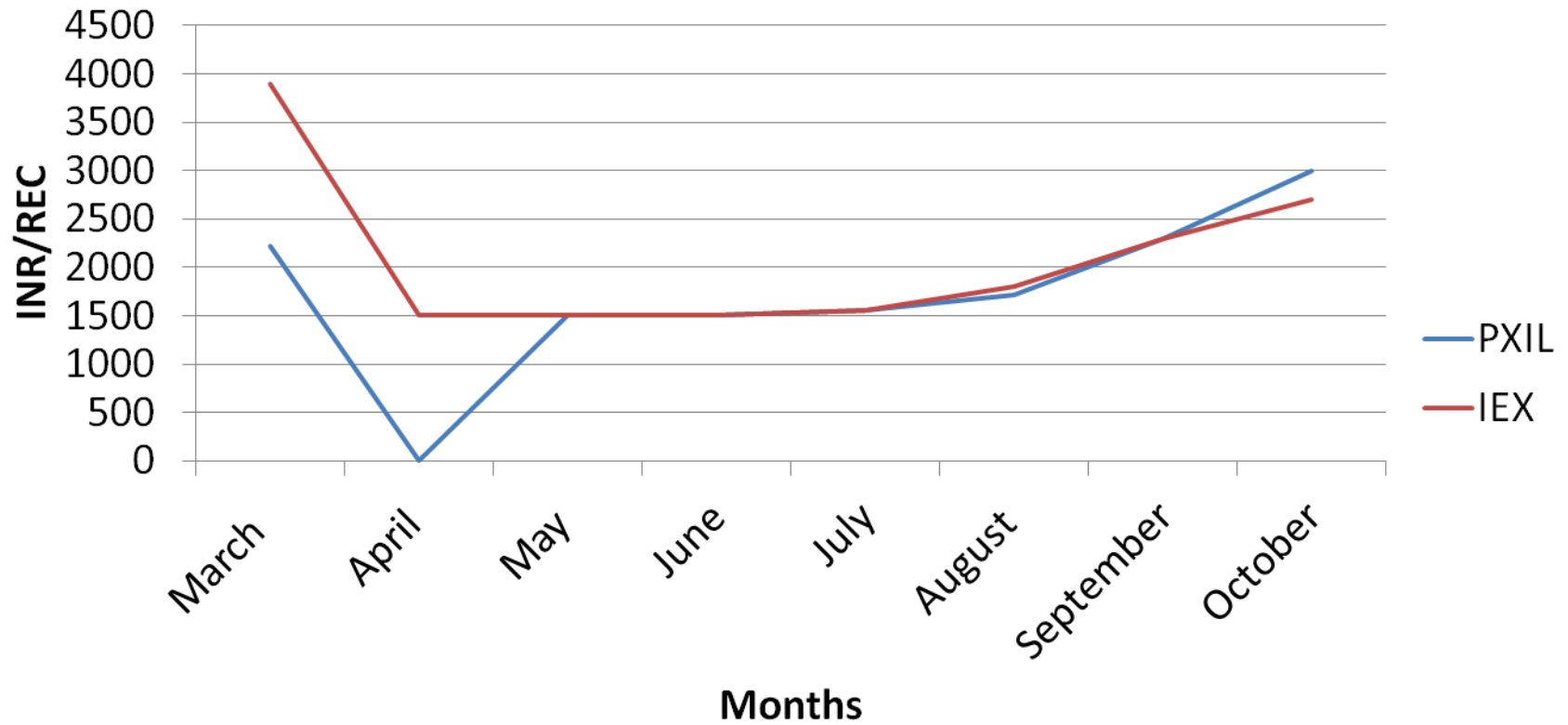
- REC and CDM can coexist
- Additionality based on APPC + Floor price of REC
 - In most cases APPC + REC is lower than cost of power (2.31 + 1.5 = 3.82)
 - CDM projects registered with captive costs of greater than 4.86
 - Hence, additionality is possible
- REC makes up for the difference between APPC and preferential tariff

Demand for RECs

- More than just DISCOMs
 - Already procuring under preferential PPAs
 - Impact on their bottom line
- Open access consumers
 - Inter-state plus intra-state is a small segment
- Captive consumers
 - Large market made up of industrial users (cement, steel, chemical etc.) having thermal capacity
 - Will focus on RE development, RE PPAs or REC

Results of trading sessions

REC Power Exchange Rates



Key challenges: Still to be answered

- Grid connectivity & Reporting - Establishing metering communication with SLDC (no. of meters, joint/online reading, etc.)
- Captive –
 - **Bagasse** – Electricity duty exemption
 - **Wind** - Electricity duty exemption & promotional banking facility
 - **RPO accounting** - Will captive users be able to account for their RE power in their consumption if they have availed any benefit (duty/banking)
- Enforcement of RPO obligations
 - Are DISCOMs going to buy
 - Will there be enough supply

Contact us

To learn more about RECs – Process, eligibility, documentation, pricing, trading, etc. please feel free to contact us at info@general-carbon.com or :

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