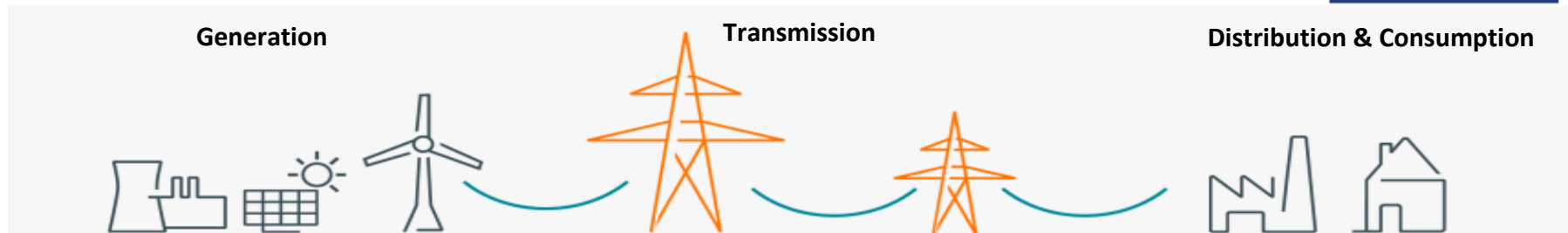




# Green Power Purchase: A step towards Net zero

**Greenco Summit, Technical Session – Promising  
Net Zero Technologies and Solutions, 27<sup>th</sup> June  
2024**



## Energy Transition

Installed Capacity	As on 31st Oct'23	FY 2030 CEA Proj.
<b>Total GW</b>	425	817
<b>Coal Cap GW</b>	239	267
<b>Coal (%)</b>	56.2	32.7
<b>RE &amp; Hydro GW</b>	178.6	506
<b>RE &amp; Hydro %</b>	~42	~62

## World's largest network

- Inter-reg. trans. Cap.: 112.3 GW
- 4.72 Lakh CKM of trans. Lines (FY'25)
- **Green Corridor: RE rich states; projects for evacuation of RE into National grid**

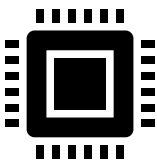
## Reforms Underway

- **Avg. AT & C Losses:** FY'21 – 22.3%; FY'22 – 16.4%; FY 23 - 13.5% (provisional)
- **Reduction in Outstanding dues**
- Focus on initiatives like RDSS, Smart meters, EV etc.

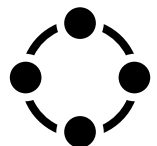
## Drivers of Energy Transition



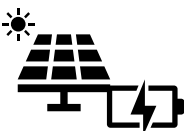
**Decarbonization**



**Digitalization**



**Decentralization**



**Democratization**

Power Market  
**Flexibility, Competitive  
Prices, Transparency,  
Payment Security, reducing  
cost of RE integration,  
efficient price signals  
Target Size ~25% in 3-5 years**

## Regulatory and Policy Environment

- Renewable Purchase Obligations- (RPO)
- Resource Adequacy framework for Capacity Markets
- Ancillary Services regulation
- Revamped Distribution Sector Scheme
- General Network Access (GNA)
- Late Payment Surcharge Rule
- Green Energy Open Access
- Sharing of losses and Charges
- Market based RE additions
- National Electricity Plan
- Power Market Regulations
- Promotion of storage and FDRE tenders

# About IEX: India's premier technology-led energy marketplace

- ❖ Nation wide, automated and transparent trading platform for physical delivery of electricity, renewables & certificates
- ❖ Commenced operations in 2008; CERC regulated
- ❖ Publicly listed company – 2017 (NSE and BSE)
- ❖ ISO 9001:2015, ISO 27001:2013, ISO 14001:2015
- ❖ IEX is on the Board of Association of Power Exchanges (APEX) where 40 Global exchanges are members
- ❖ IEX is member of 13 State Advisory committees (SACs).
- ❖ FY 23-24 Electricity volume: 110 BU

## Robust Ecosystem

**7000+**

Registered participants

**4500+**

Commercial & Industries

**1500+**

RE Generators & Obligated Entities

**600+**

Generators

**55+**

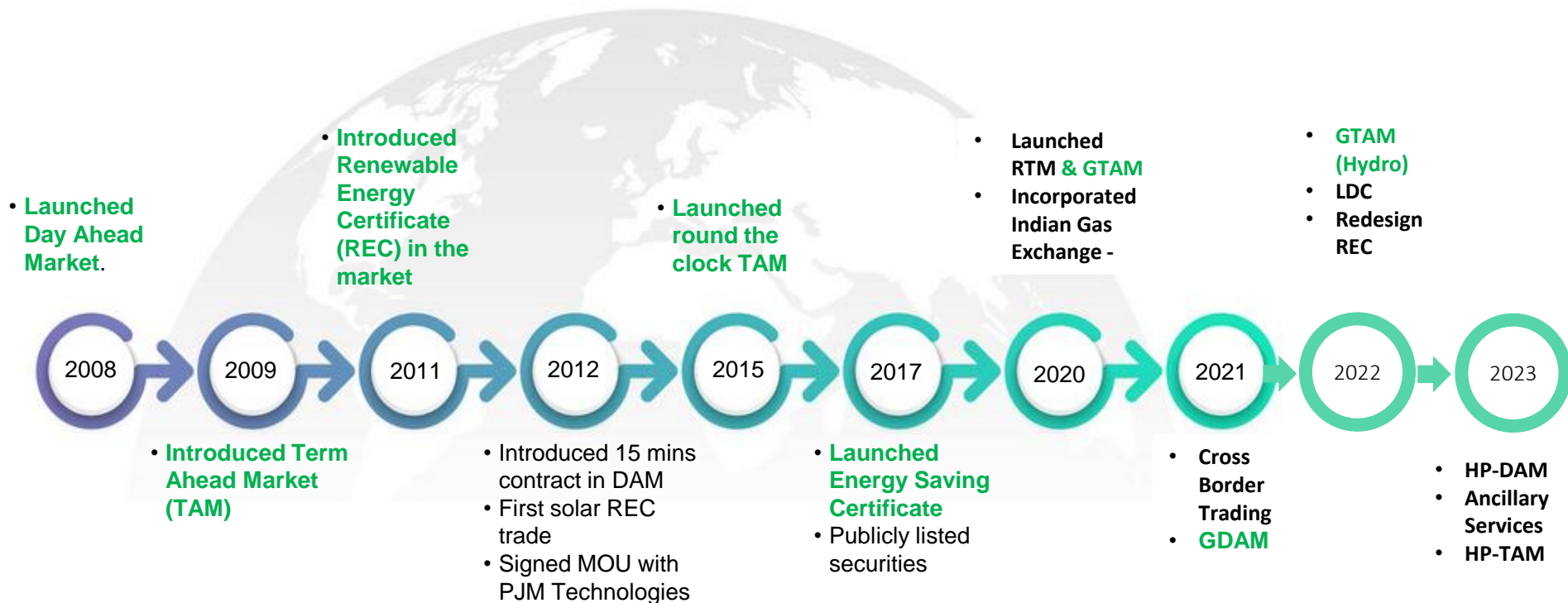
Discoms (all)

**100+**

ESCert Entities

**Leading the future of energy with innovation and technology**

# IEX Over the Years – Journey of innovation basis the market need



# Existing Products & Auction Mechanism



- Integrated DAM - *Closed double sided auction*
  - **G-DAM**
  - DAM (includes Cross Border Trade)
  - High Price DAM
- Real-Time Market (RTM) - *Closed double sided auction*
- Intraday Market (Conv., HP ITD & **Green**) – *Continuous matching*
- Day Ahead Contingency (Conv., HP DAC & **Green**) – *Continuous matching*
- TAM, HP TAM & **Green TAM (up to 3 Months)**
  - Daily, Weekly, Monthly – *Uniform price step auction*
  - Any Day Single-Sided Contract (Conv. & **Green**) – *Reverse auction*
- Tertiary Reserve Ancillary Services (TRAS): AS-DAM & AS-RTM
- **Certificates: RECs & ESCerts** – *Closed double sided auction*

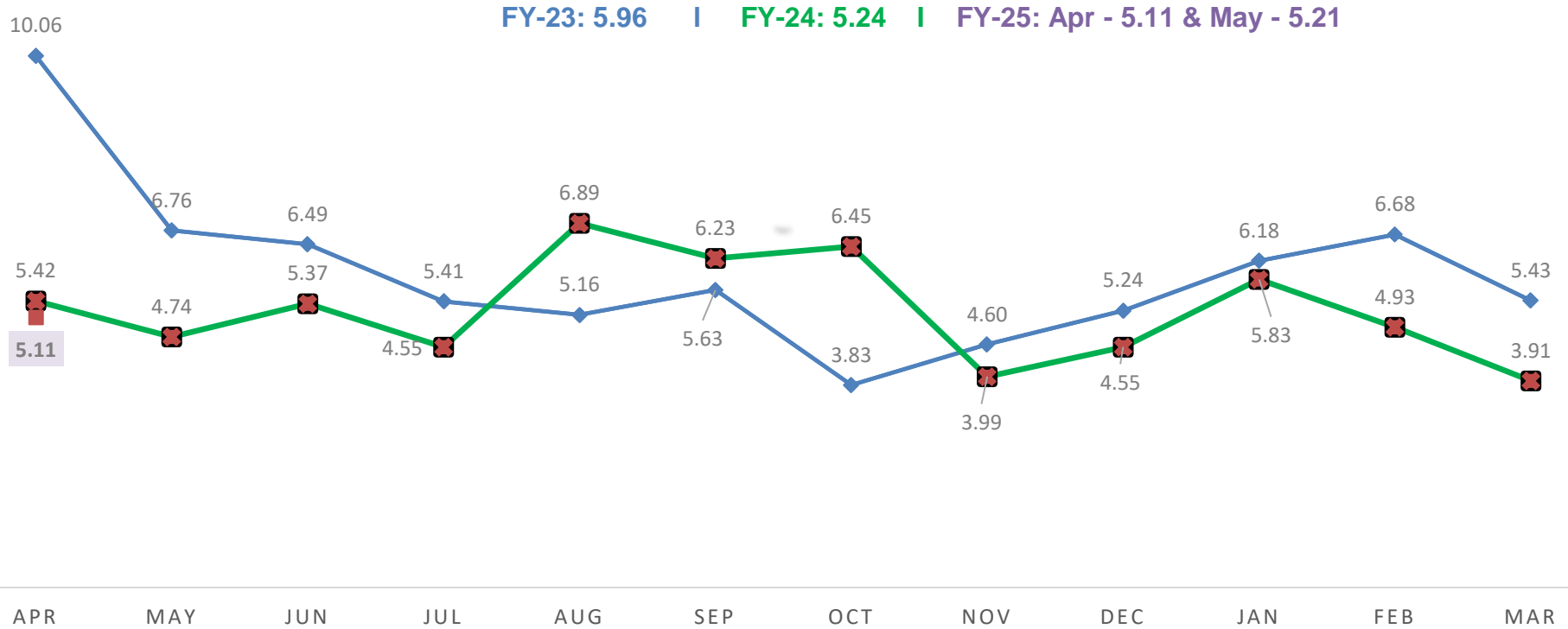
# Long Duration Contracts: Products and Timelines

Name of Contracts	Commencement of Bidding	Delivery Duration
<b>Daily Contract</b>	On daily Basis	T+2 to T+90 Days
<b>Weekly Contracts</b>	Monday of the week prior to delivery	TW+1 to TW+12 Weeks
<b>Monthly Contract</b>	First Day of the zero month	TM+1 to TM+3 Months
<b>Any-Day Single Sided Contracts</b>	On Daily Basis	T+2 to T+90 Days

Currently, contracts are for maximum duration of three months,.

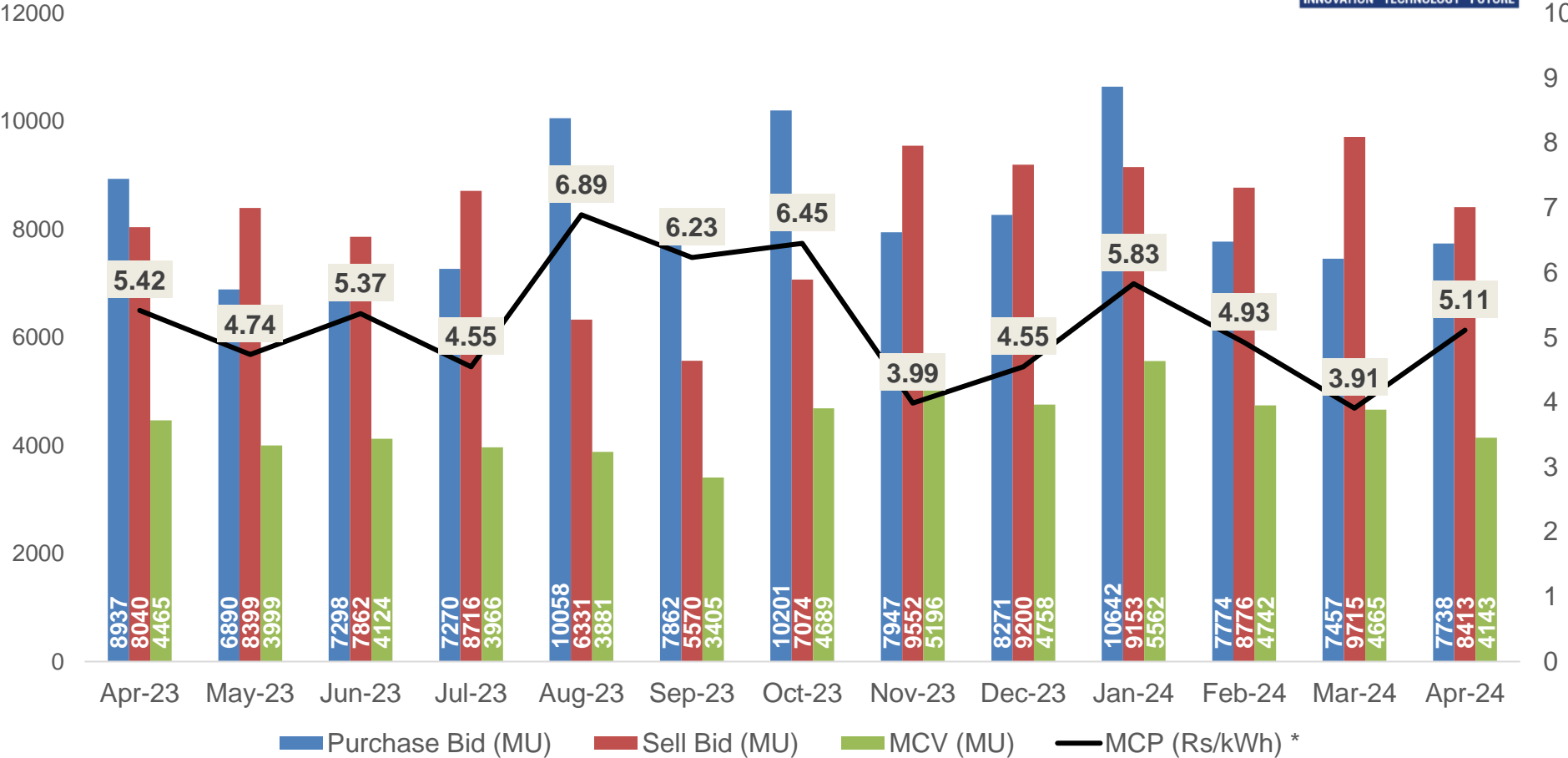
Application for longer tenure – 11 months product submitted to Hon’ble CERC and is currently under review

# Price Trends (Rs./kWh) at DAM



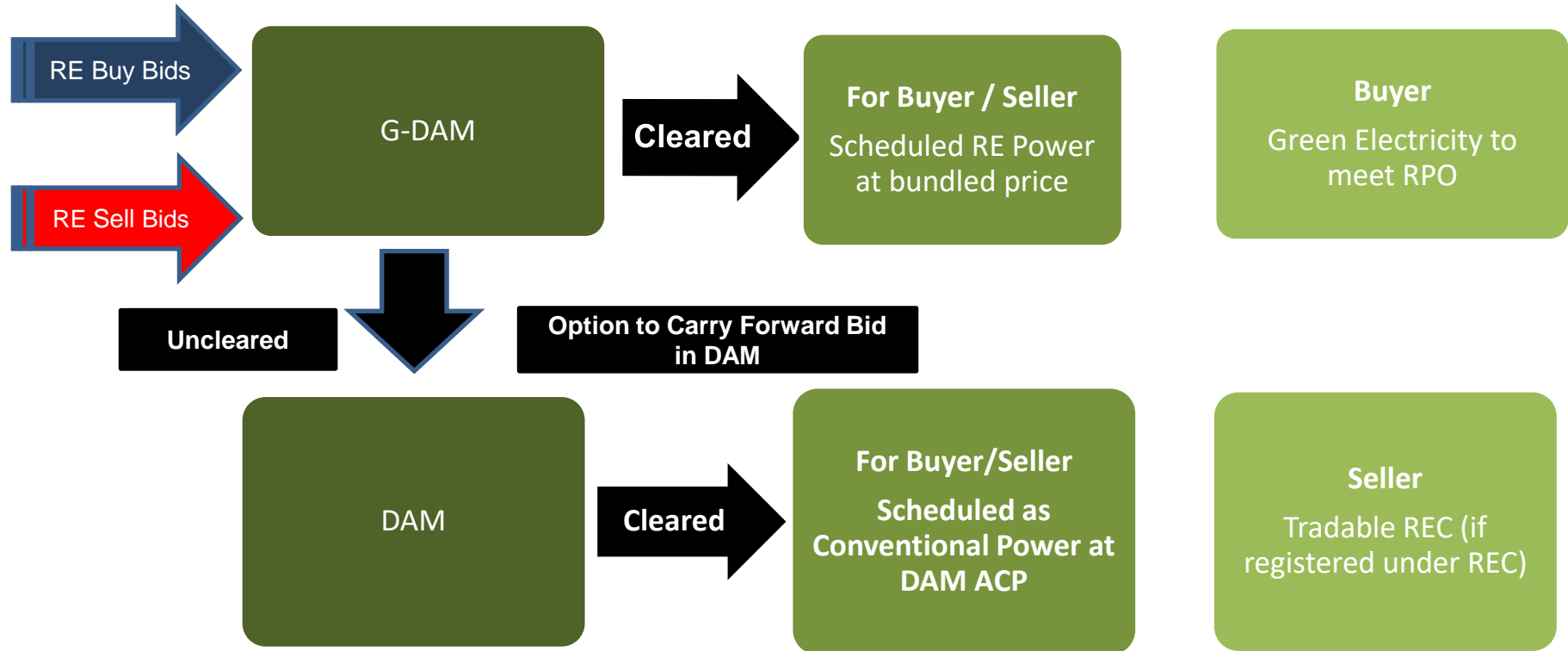


# Monthly DAM Market Snapshot



# **Power Exchange's role in promotion of Green power**

# G-DAM Stages



# Green Market: Realization

Price (Rs/  
kWh)

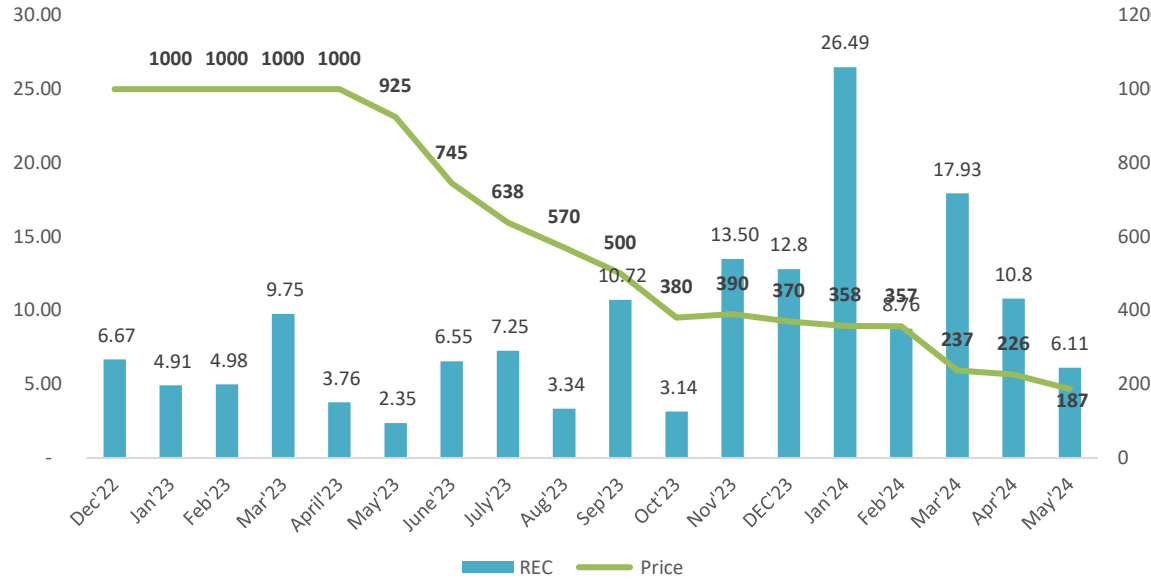


FY 22	
GDAM Avg. (RTC)	5.29 [premium of Rs 0.89 / kWh]
DAM Avg.	4.40
FY 23	
GDAM Avg.	6.48 [premium of Rs 0.54 / kWh]
DAM Avg.	5.94
FY 24	
GDAM Avg.	5.81 [premium of Rs 0.57 / kWh]
DAM Avg.	5.24

# Renewable Energy Certificates (REC) Market Snapshot



REC Cleared Volume (in Lakhs) Vs Avg Price (in Rs/REC)



## Key Regulatory Updates

### REC Regulations 2022, effective from 05<sup>th</sup> Dec'22:

- Technology multiplier introduced for REC: Wind & Solar – 1; Hydro – 1.5; Municipal Waste – 2; Biomass & Biofuel – 2.5.
- Capping removed on REC prices
- Discoms purchasing RE power in excess of RPO shall be eligible for issuance of REC

### Hon'ble CERC order dated 8th October 2023:

- REC Trading to be held on every second and last Wednesday of the month
- No preference to be sought from buyers for any technology-specific RECs; instead, Single RECs should be traded promoting fungibility

## REC Bilateral Trade Snapshot

- Since Dec'2022, 21.3 lakhs RECs have been traded bilaterally through Traders

- REC Inventory as on 15<sup>th</sup> May '24 is 3.77 crores
- Low compliance by Discoms and CPPs lead to low clearance

# ES Certs Trading at IEX Under PAT Cycle-III: At a glance



Tradable Instruments	Energy Saving Certificates (ES Certs)
<b>Underlying</b>	1 ESCert = 1 MTOE (Metric Tonne of Oil equivalent)
<b>Price Quotation</b>	INR/ESCert
<b>Price Tick</b>	1 INR
<b>Price Limit</b>	Not Applicable
<b>Volume Tick &amp; Minimum Order Volume Limit</b>	1 ESCert
<b>Trading Cycle</b>	Weekly Trading on Tuesday
<b>Validity</b>	Till ESCerts are sold
<b>Resale</b>	Not Allowed
<b>Floor Price</b>	Rs 2165 (10% of price of 1Mtoe i.e. Rs 21650)

# Benefits of Green Markets

## BUYER



DISCOM

- ❖ Competitive prices
- ❖ No long-term rigid commitments
- ❖ Flexible and transparent procurement
- ❖ Integrated Energy + RPO fulfilment



INDUSTRY

- ❖ Meeting Renewable Commitments
- ❖ Energy Efficiency Targets
- ❖ Optimizing Power Cost
- ❖ Brand Image
- ❖ Cost lock-in

## SELLER



DISCOM

- ❖ Additional avenue to sell besides LT arrangement
- ❖ Creation of merchant renewable capacity
- ❖ Access to pan India market
- ❖ Certainty in despatch
- ❖ RTM for imbalance settlement
- ❖ RE rich Discoms – sell option instead of backing down
- ❖ Payment guarantee



RENEWABLE



# New Product Development



# New Product development at IEX

Growth from  
recently  
launched  
products

- RTM: June'20
- Green Markets: GTAM launched in Aug'20, GDAM launched in Oct'21
- Cross Border: April'21
- Term Ahead Market Up to 3-Months in June'22
- HP-DAM (High Price-DAM): March'23
- Ancillary Market launched: June'23
- HP-TAM: Oct'23

Continued product innovation required (to counter the challenges which Indian power sector is expected to face)

- ❖ **To facilitate RE integration**
- ❖ **To ensure resource adequacy:** Growth rate of 6-7% is expected in electricity demand and therefore, new products are required to ensure **maximum utilization of existing capacities & support addition of new capacities**
- ❖ **To integrate de-centralized RE capacity:** To minimize T&D cost and RE integration cost

# Power Market to play critical Role



## Dispatchable RE, BESS, Green Hydrogen

- ❖ Market (GDAM & GTAM) to play crucial role to support Firm & Dispatchable RE Tenders (Excess or Deficit)

## Capacity Markets

- ❖ Resource Adequacy framework provides opportunity for development of Capacity markets in India
- ❖ Capacity market is crucial to support large-scale addition of BESS & PSP etc.

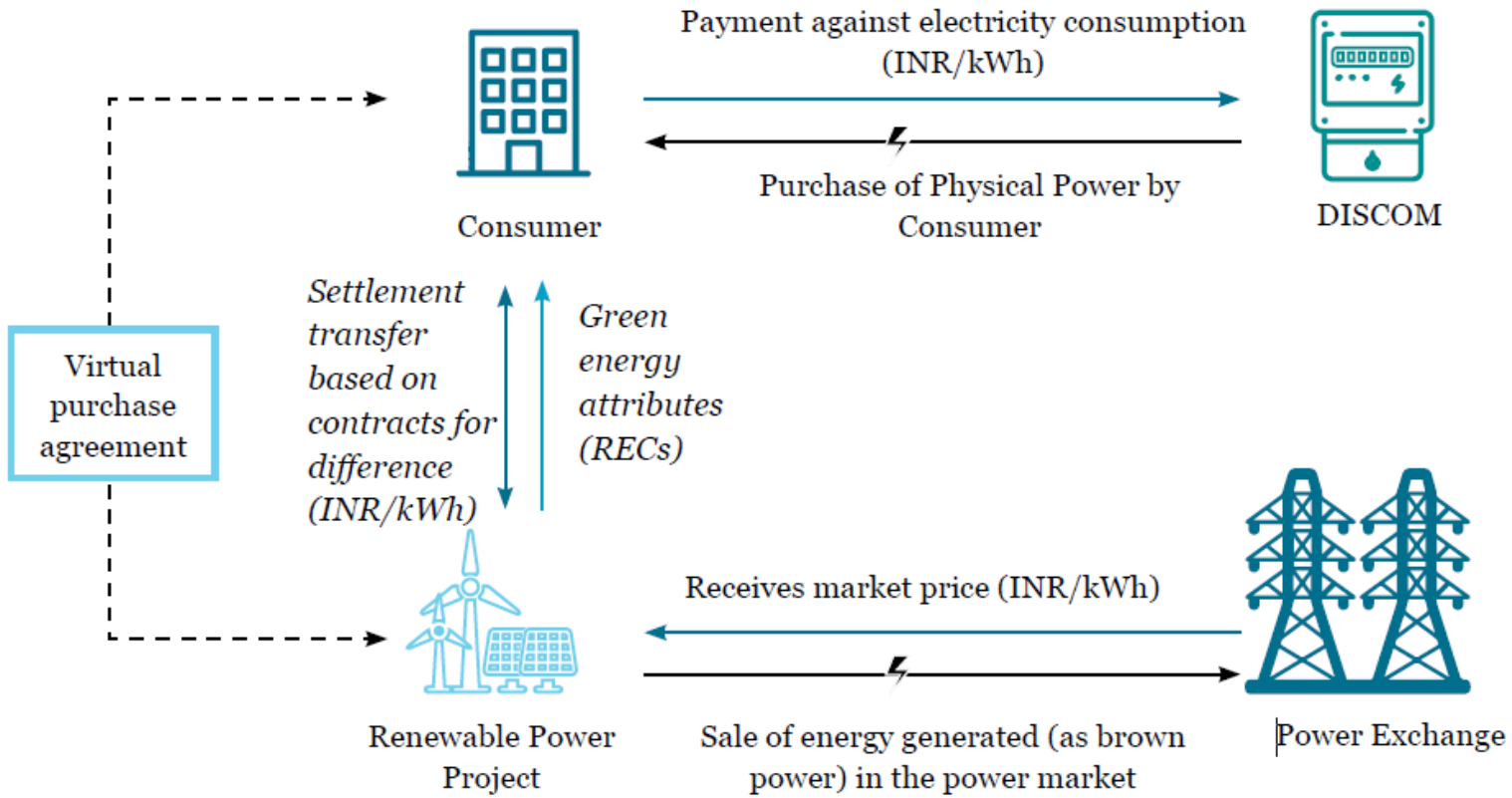
## P2P Trading

- ❖ P2P trading of electricity is emerging in different parts of the world due to increasing number of Prosumers
- ❖ The Guidelines have been issued in UP and draft guideline has been issued by DERC
- ❖ IEX is already exploring P2P opportunities

# New Product development: Virtual PPA



## Introduction of Model


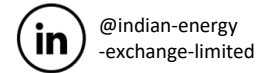
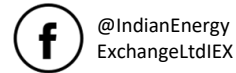


## Virtual PPA could be a Corporate's decarbonization tool


- ❖ There is increasing trend of **Voluntary Climate Commitments on Corporates, MSME driven by Consumer's focus and export-related barriers such as CBAM**
- ❖ C&I Consumers, MSME etc. contribute ~51% of India's total consumption. By 2030, C&I consumption could reach ~ 1100 BU
- ❖ Scope 2 Emission (Electricity consumption) reduction is a 1<sup>st</sup> step being adopted to reduce GHG footprints
- ❖ VPPA model is a long-term reliable model to hedge the cost of reducing Scope 2 emission
- ❖ **VPPA model is not conflicting with Discom's interest; off-taker is unaffected by OA charges risk**
- ❖ **According to estimates, VPPA markets in India has a potential to reach beyond 22 GW by 2030**




# Thank you



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