

RTM & Green Market

8th Oct 2020

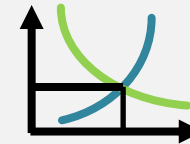
Rajesh K Mediratta
Director (Strategy)
Indian Energy Exchange Limited

- RTM BENEFITS
- KEY STATISTICS
- VOLUME/ PRICE PROFILE, JUNE-SEPT' 20
- GREEN MARKET (GTAM)
- WAY FORWARD



Real Time Market- Highlights

- ✓ An organized platform for energy trade closer to real time- Trading started from 1st June 2020.
- ✓ Half Hourly market
 - ❖ To be conducted every half an hour (48 times per day)
 - ❖ Delivery for 30 minutes in two time blocks of 15 minutes each
- ✓ Price discovery Mechanism
 - ❖ Double sided closed auction with uniform price
 - ❖ MCP/ACP and MCV/ACV will be discovered for each 15 minute block
- ✓ NLDC to inform available transmission margin before the gate closure of each session
- ✓ RTM would be financially and physically binding.
- ✓ Bidding and scheduling at Regional periphery.
- ✓ Any entity will be able to participate in the Real Time Market.
- ✓ Once NOAR is in place, RTM to be brought closer to delivery.



BUYER



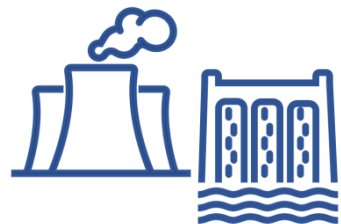
DISCOM

- ✓ Reduce overdrawl/sign change penalty
- ✓ Manage variation in RE generation
- ✓ Handle sudden demand increase
- ✓ Better response to generation Outage
- ✓ Optimization- SGS/URS



INDUSTRY

- ✓ Uncleared DAM Vol
- ✓ Cost Optimization
- ✓ Manage demand variation



GENCO

- ✓ Meet Schedule commitment - Plant outage

SELLER



DISCOM

- ✓ Avoid under drawal/ sign change penalty
- ✓ Manage demand drop
- ✓ Manage increase in RE generation
- ✓ Immediate payment



GENCO

- ✓ Uncleared DAM volume
- ✓ Thermal
 - ✓ URS Sell - improve PLF
- ✓ Hydro
 - ✓ Must Sell- Spillage
- ✓ Immediate Payment



RENEWABLE

- ✓ Despatch close to Real Time
- ✓ Optimize number of revision
- ✓ Avoid DSM
- ✓ Immediate Payment



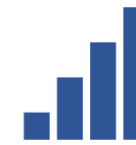
267 Buyers
172 Sellers

Total
Participants



PRICE

Avg: 2.36
Wt Avg: 2.54
Max: 6.00
Min: 0.015



Total Volume

Buy Bid: 3,783 MU
Sell Bid: 8598 MU
Cleared: 2866 MU



Top 5 Share

Buyers: 61 %
Sellers : 39 %



Market Share

Buy Bid: 99%
Sell Bid: 99%
Cleared: 99%



Max Volume- Day

Buy Bid: 59 MU
Sell Bid: 113 MU
Cleared: 53 MU



2.3 : 1

Active Time
Block



Buy Bid: 99%
Sell Bid: 99%
Cleared: 99%

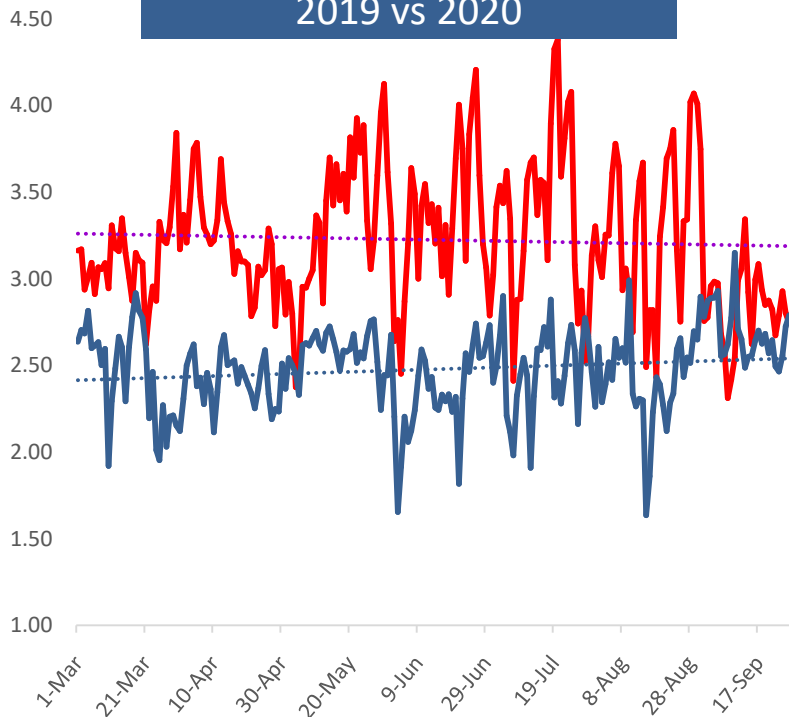


Max Volume-Time block

Buy Bid: 5,148 MW
Sell Bid: 7,091 MW
Cleared: 4,203 MW

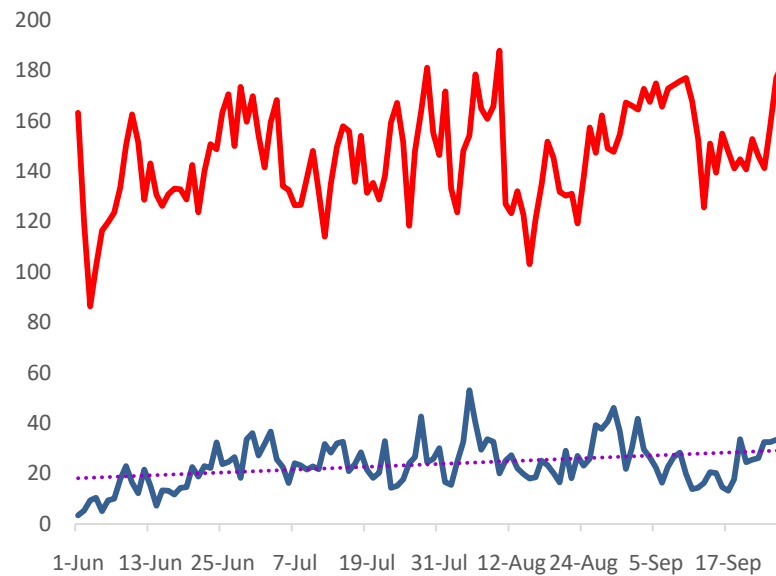
All Electricity Market Stats (FY21)

**IEX DAM PRICE COMPARISON
2019 vs 2020**



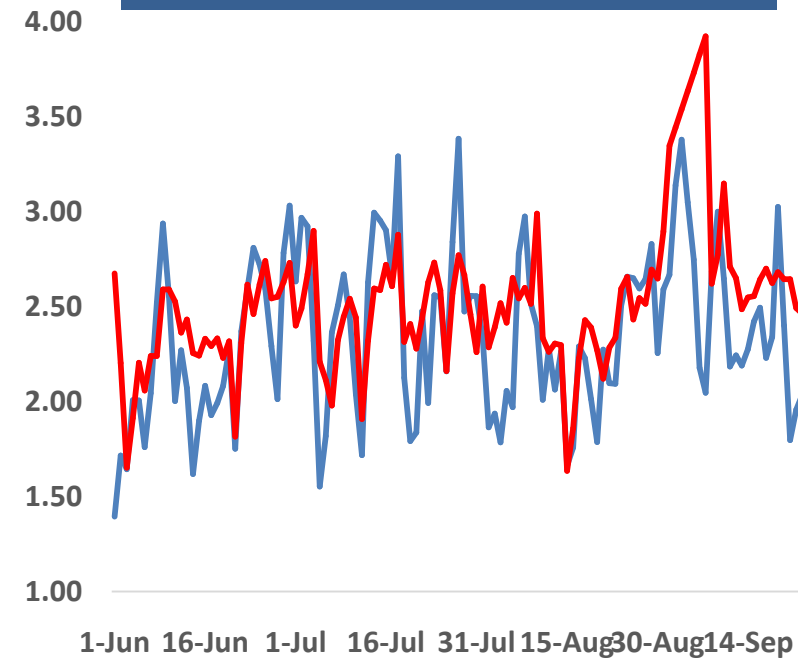
— 2019
— 2020

**DAM vs RTM CLEARED VOLUME
(2020)**



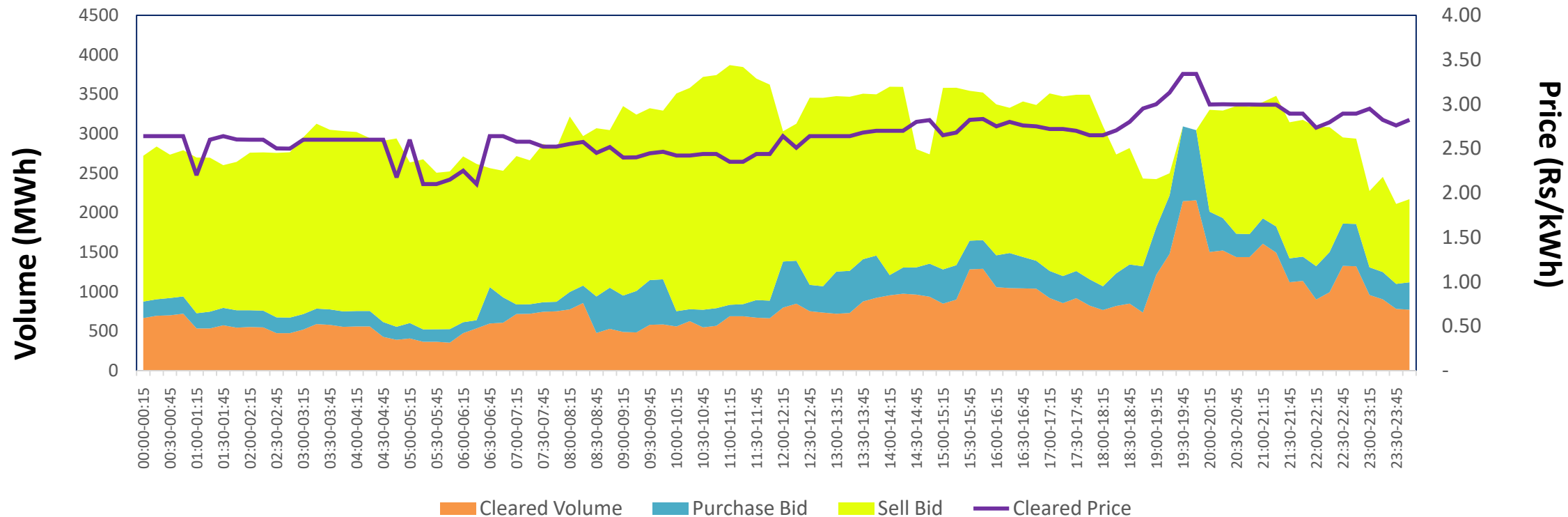
— DAM MCV
— RTM MCV

**DAM vs RTM Average IEX Price
(2020)**



— RTM MCP
— DAM MCP

RTM Day Profile – 10th September, 2020



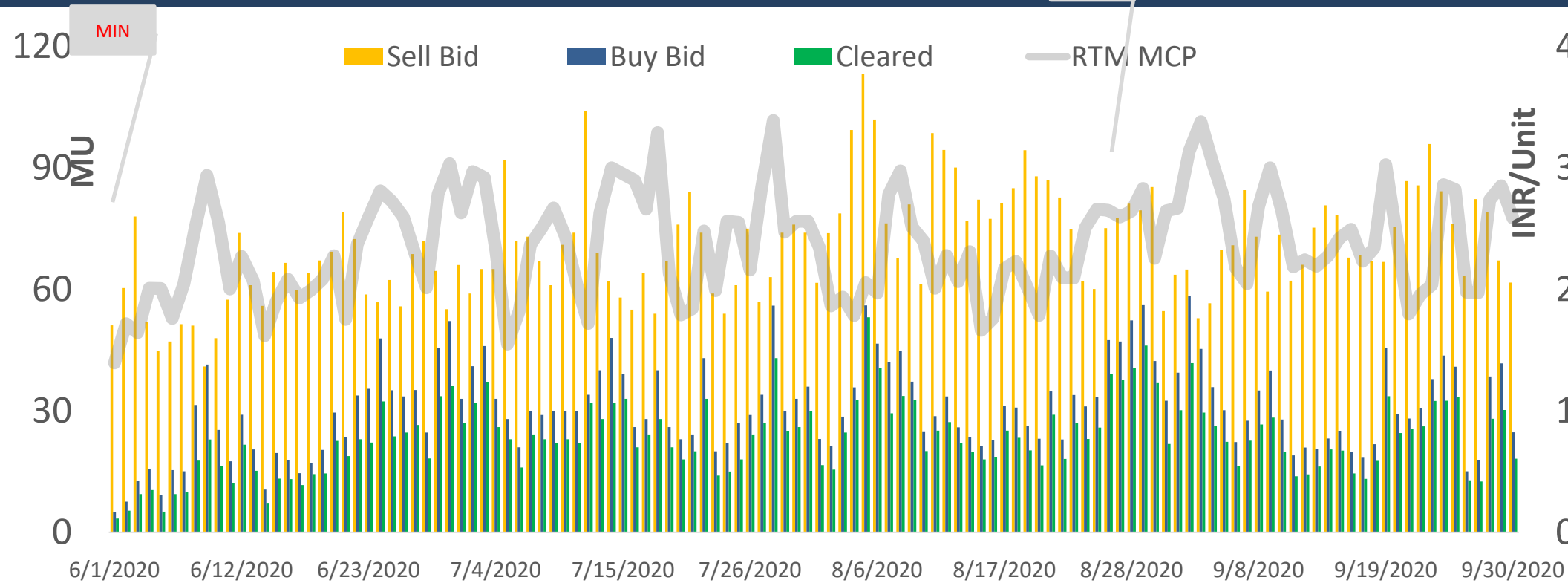
- There is high liquidity in RTM market, Sell bids remain higher than buy bids in all time blocks
 - Sell bids were **2.26 times** of buy bids so far, which indicates high liquidity on sell side RTM market

VOLUME PROFILE

June-Sep 2020



DAILY



DAILY AVERAGE

Buy: 31 MU
 Sell : 70 MU
 Cleared: 23 MU
 MCP: Rs 2.36 /u

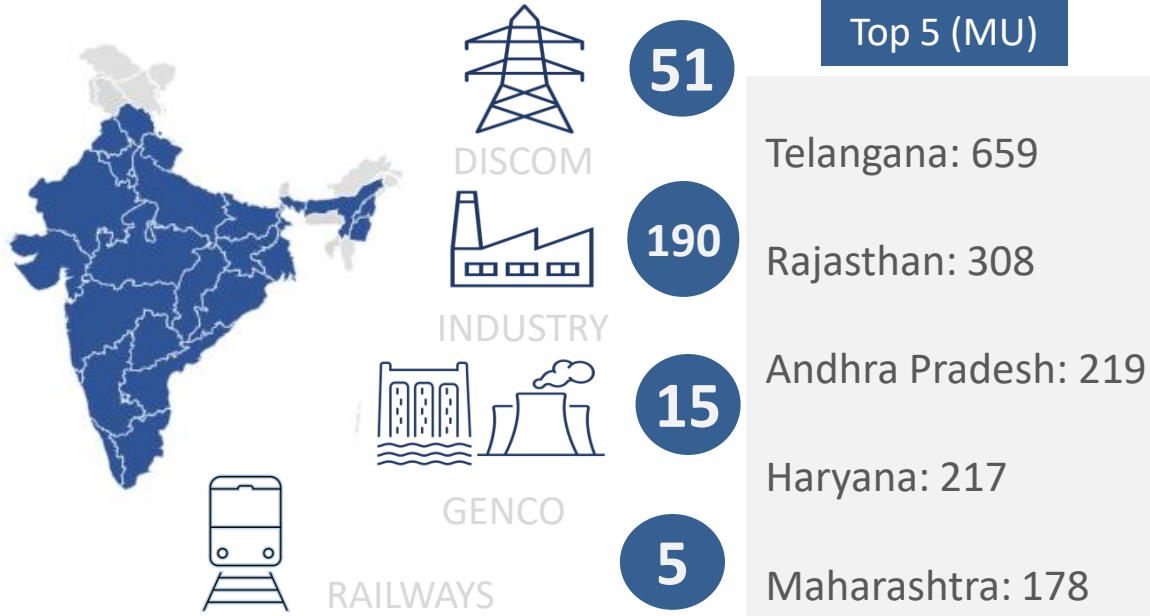
AVERAGE MW

Buy: 1278 MW
 Sell : 2943 MW
 Cleared: 980 MW

Key Trend

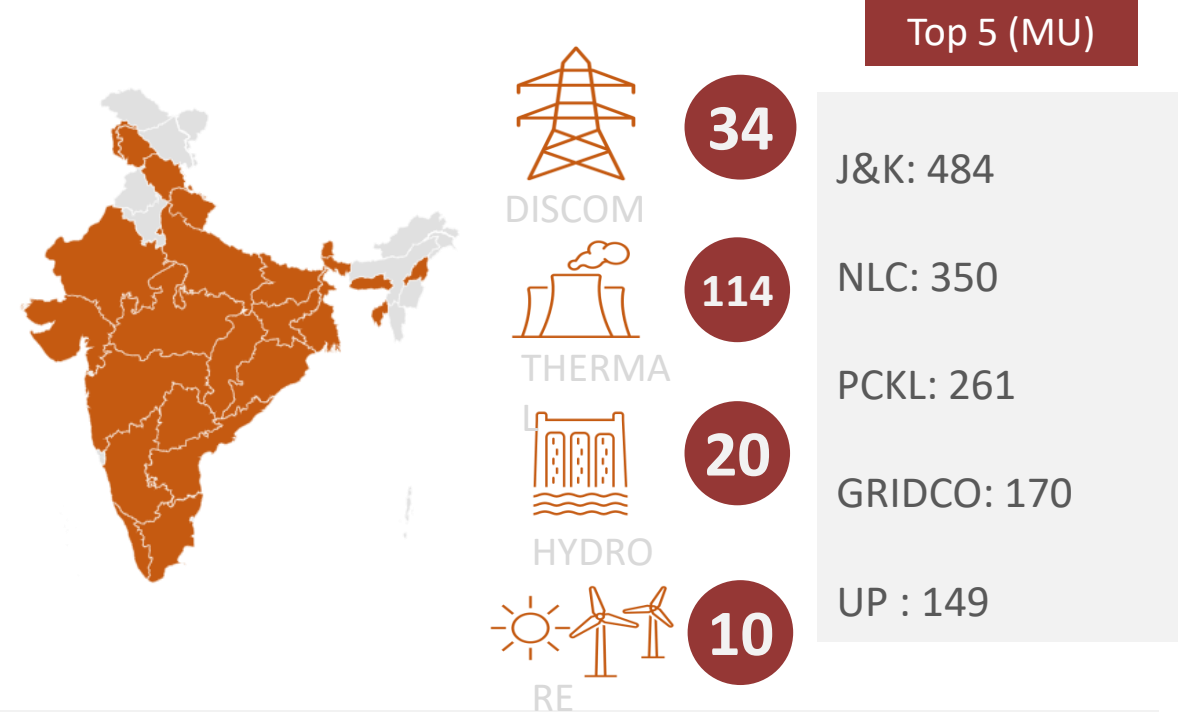
Sell > Buy : 92% of time
 Sell : Buy – 2.3:1
 Clearance
 Sell: 33%
 Buy : 97%

BUY



- ✓ Major Discom – Telangana, Rajasthan , Andhra Pradesh, Haryana & Maharashtra
- ✓ Major OA-
 - ✓ Sector- Railways, Steel, Cement & Chemical Industries.
 - ✓ States: Gujarat, UP, AP, Bihar, Assam ,Odisha
 - ✓ Industry- Dalmia Cements, Travancore Chemicals, , Shree Rayalaseema Alkalies, Green Valley Industries, Bihar Cement Unit
 - ✓ Major Genco: Jorethang Loop, Teesta Urja, Essar Power, Shiga Energy, Jindal Power

SELL



- ✓ Major Discoms – J&K, Karnataka, Odisha, UP & Madhya Pradesh
- ✓ Major Genco - NLC, NTPC, Adani, Sembcorp, Teesta Urja Limited etc
- ✓ 10 RE project leveraging closer to delivery market option

Green Market Options



BUNDLED

FEED IN TARIFF

COMPETITIVE BIDDING

CAPTIVE

THIRD PARTY

GTAM 

GDAM & Other



UNBUNDLED

DAM

TAM

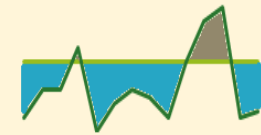
RTM

CAPTIVE

THIRD PARTY

OTHER IEX ELECTRICITY
PRODUCT

REC



CFD

GAURANTEED PRICE

BILATERAL

POOL BASED

To be introduced

Green Market - Contracts Snapshot

WEEKLY

- Traded in energy terms.
- Traded for delivery from Monday to Sunday.
- No revision in schedule.
- 15 min Granularity
- National level contracts .

DAILY

- Traded in energy terms.
- Traded for delivery from T+2 to T+10 (9 days) rolling basis.
- No revision in schedule
- 15 min Granularity
- National level contracts .

DAC

- Traded on D-1 in MW terms
-
- No revision in schedule
- 15 min Granularity
- National level contracts

INTRADAY

- Traded 3.5 hours before delivery in MW terms
- No revision in schedule
- 15 min Granularity
- National level contracts .

VOLUME (MWh)



BUY: 170,006

SELL: 151,677

Cleared: 106,476

PARTICIPATION



GENERATOR: 5

DISCOM: 13 Buyer, 2 Seller

CONSUMER: 12

NR | WR | SR | ER | NER

PRICE (Rs/Unit)



AVERAGE: 3.42

MIN: 3.00

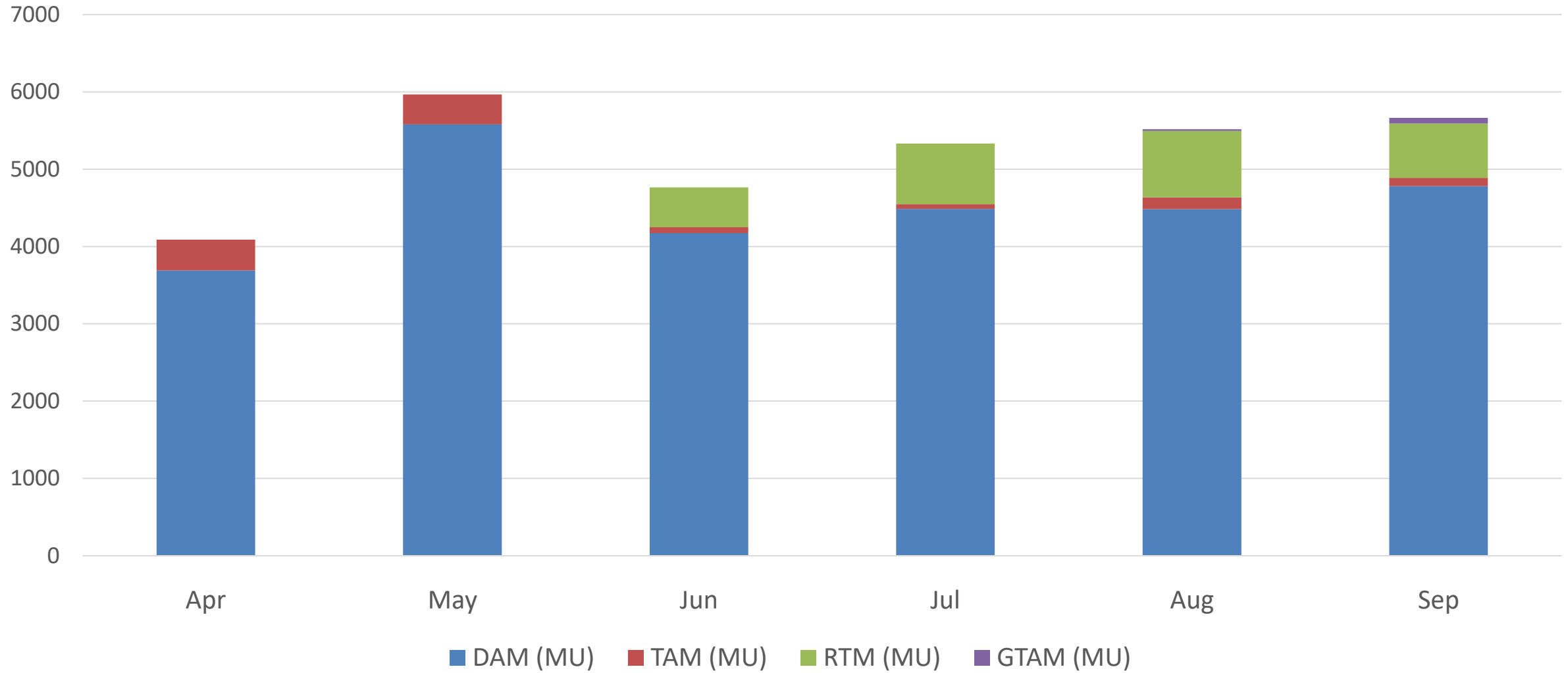
MAX: 3.80

DAYS



TRADING ON
ALL DAYS SINCE
INCEPTION

All Power Market Segments Volume (FY21)



MARKET DEEPENING

- Waiver of ISTS Losses & Charges for transactions in exchange green contracts
- Ensuring parity for market-based options.
- Allow RE Generators to purchase power from Market to manage intermittency
 - RTM market to be used for managing forecasting deviation
- Allow Bundling with market to provide more competitive RTC power
- Include Non Solar RE (Other than Wind) for market participation
- Innovative contracts like CfDs

POLICY & REGULATORY

- Uniform Regulatory & Policy framework across the States
- Introduce contracts to facilitate aggregation of RTC supply
- Inclusion of Exchange in competitive bidding guidelines
- Flexibility in existing REC market allowing dynamic/ interchangeability status as compared to existing rigid structure.

Going Forward

Green Day ahead Market(in discussion)

- GDAM market will operate in similar lines as existing Day Ahead market(DAM).
- It will have two types of Contracts-Solar and Non-solar. **Buyers will be eligible for RPO Compliance.**
- In order to facilitate sell of unsold power of RE Sellers, RE Sellers will be able to bid unsold power of G-DAM in DAM. For the power sold in DAM market, RE Seller will get **equivalent number of RECs** in addition to Area Clearing Price (ACP) of DAM.
- The RECs issued to RE Seller can be sold in REC market at Exchange. Since RE Sellers have zero marginal cost, hence in the existing DAM their bid price should be very low and therefore RE Sellers will be in a better position for clearance of their power in DAM.
- Matching in such markets will happen in same manner as DAM and window for accepting bids will open between 08-09 am for delivery on next day. After matching and clearance from NLDC, the final transactions will be notified by 10 am.

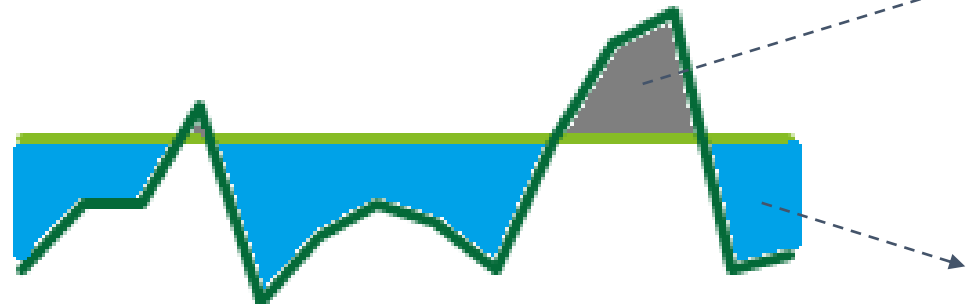
Contracts for Difference (CFD)

Mechanism for protecting revenues of RE generators

- RE power is traded/ settled on exchange at market price
- Revenue of RE generators is guaranteed through a Contracts for Difference (CFD)

- *CFD has been adopted by several countries like UK, Germany, Australia, France, Italy, Portugal, Sweden, Spain, Switzerland and etc.*

- Guaranteed Price to RE Generator
Determined through an auction
- Market Price
Based on power market sell/ bid dynamics



If Market Price is more than Guaranteed Price, *difference is paid by the generator*

If Market Price is less than Guaranteed Price, *difference is paid to the generator*

Thank You

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