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Power Chronicle

Power Market Framework and Proposed Peak-DAM & Peak-RTM Products

Editorial

The spirit behind introducing a competitive market, underlined in the Electricity Act 2003, is aimed at enhancing social welfare. Barriers to entry to the market influence the level of competition and, hence, the outcome thereof. Market segmentation should be avoided to safeguard liquidity and competition in the power market. The new market segment, the Peak-DAM, while may seem to address a gap in the product segment, limits participation, thus undermining the spirit of competition. An alternative approach to address significant arbitrage in market prices across the peak and off-peak time blocks, and the greater need for flexibility, can also be addressed through participation of demand response as well as other market players. Limited participation also leaves room for market manipulation, at the outset, as a segmented market with low volumes cannot protect itself against abuse of market power. This further highlights the need for vigilant market monitoring and increased transparency in identification and redressal of both actual and potential abuse of power market.

The HP-DAM, as a segmented high price market product, had miniscule cleared volume throughout the year. This segment was introduced for a variety of reasons, among others, providing a platform to high-cost generators. Energy storage systems are high cost 'generators'. Further market segmentation does not bode well for the market design.

The market product integration, particularly between G-DAM and DAM, has worked quite well, as the segmentation criteria were based on green attributes. Introduction of new market segments makes it challenging to implement order carry forward, especially if they are not logically sequential. Recently proposed product design for Peak-DAM and its backward and forward integration with G-DAM, DAM and HP-DAM seem to present such a challenge. Given the above challenges, it is advisable to let the HP-DAM segment to be subsumed with the proposed Peak-DAM while addressing any concerns identified.

Proposed expansion of the eligibility criteria for participation in 'trading' activities by the over the counter (OTC) platforms, effectively creates a backdoor entry into market segments that have more strict eligibility criteria. Asymmetric regulatory burden wherein OTC platforms can avoid strict regulatory compliance applicable for the power exchanges and the traders, creates a perverse incentive to take the easier route amidst ambiguous participation criteria such as quasi-trader or quasi-exchange in a limited manner. Furthermore, OTC platforms must also be brought into the ambit of wider and transparent disclosure requirements enabling the Central Electricity Regulatory Commission (CERC) to design and implement a robust market monitoring framework.

Anoop Singh (Editor)
Founder & Coordinator, Energy Analytics Lab

Keywords: Power Exchange, Energy Storage System (ESS), Virtual Power Plants (VPPs), Market Clearing, Order Carry Forward, Market Monitoring, Power Market, Virtual Power Purchase Agreements (VPPAs), Over the Counter (OTC) platforms, General Network Access (GNA) & Bilateral Contracts.

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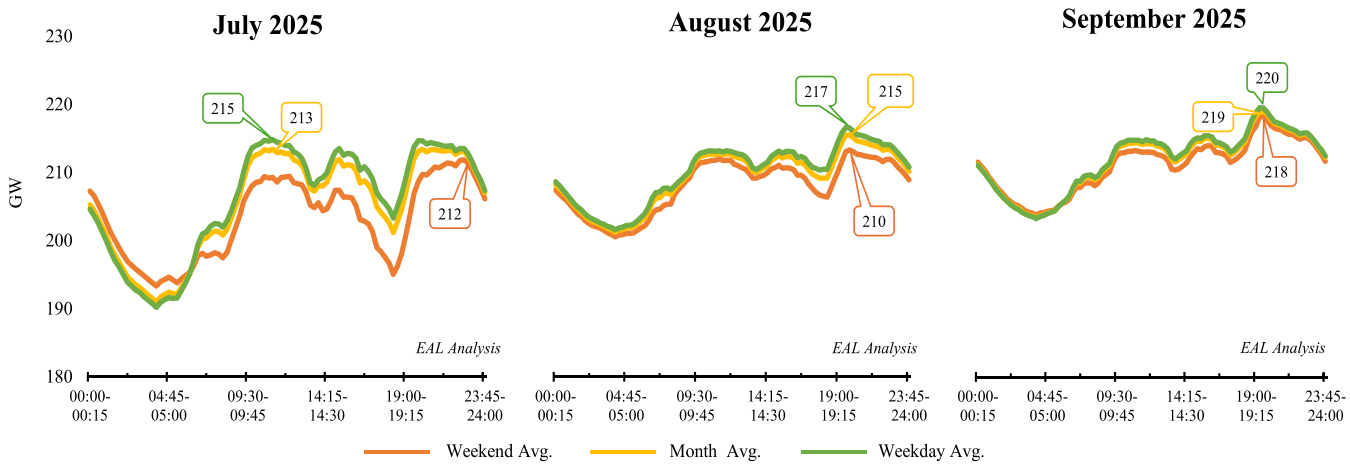
Power System Overview & Analysis

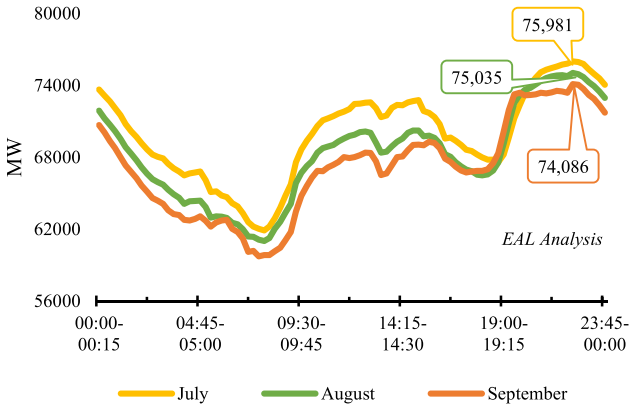
All India Demand Met Profile



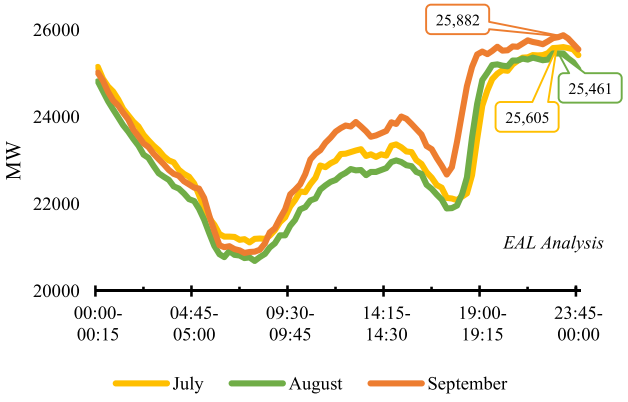
From July to September quarter, all India peak demand reached 242 GW (19:15 - 19:30) on 20th September, 2025, about 1.7% higher than the previous year's peak demand recorded at 238 GW (12:00 - 12:15) on 7th September, 2024, during the same quarter.

Region-wise Demand Met Profile

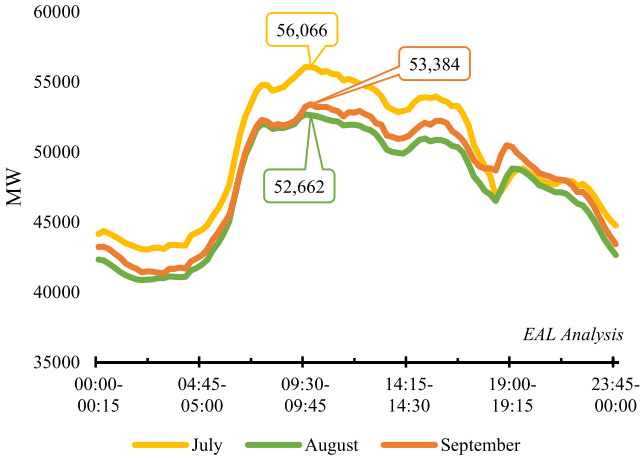
Northern Region



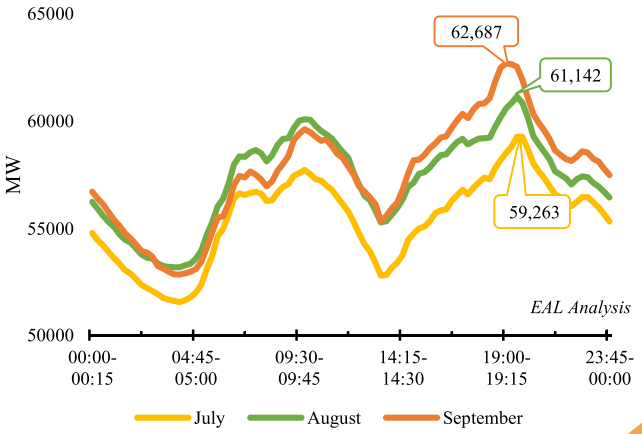
Eastern Region



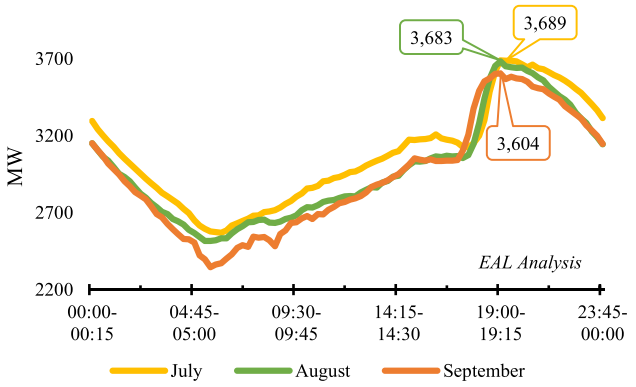
Southern Region



Western Region



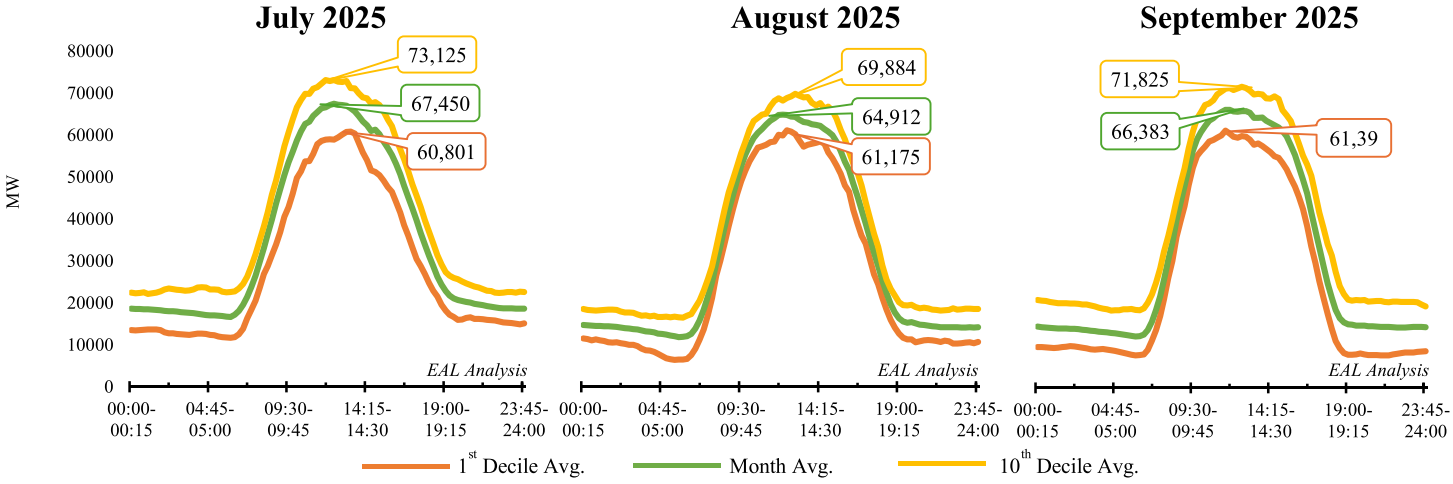
North Eastern Region



- Significant increase in demand can be observed for Northern region from 19:00 to 20:45 hrs and in Eastern region from 17:00 to 19:00 hrs, in all three months respectively.
- Decrease in demand can be observed for North Eastern and Southern regions from 19:00 to 23:00 hrs in all the three months respectively.
- Average demand is found to be higher for Northern and Southern region as compared to the other regions in the month of July.

Demand and generation profiles at National, Regional and State-level can be accessed on EAL's web portal.

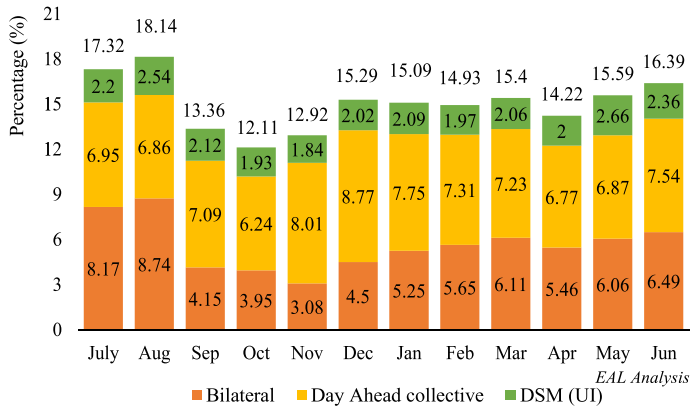
All India Renewable Energy Generation Profile



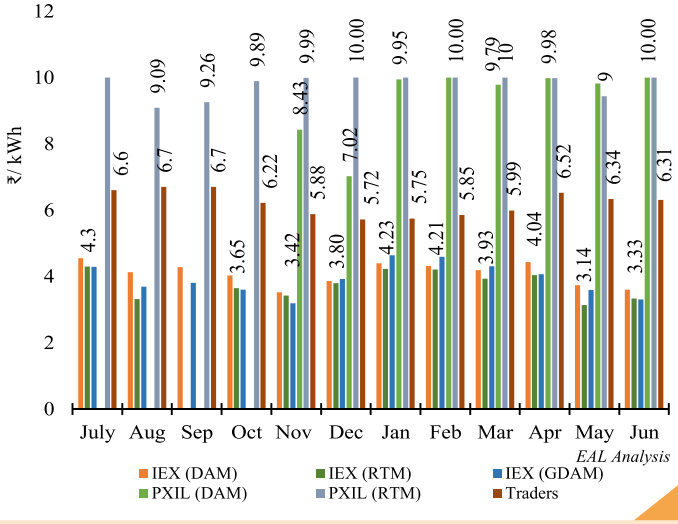
All India peak RE generation reached 78.80 GW (12:15 - 12:30) on 27th September, 2025, about 18.99% higher than the previous years' peak of 66.22 GW (12:45 - 13:00) on 26th August, 2024, during the same quarter.

Short-term Energy Transactions

Share of Short-term Energy Transaction of Total Electricity Generation (July 2024-June 2025)

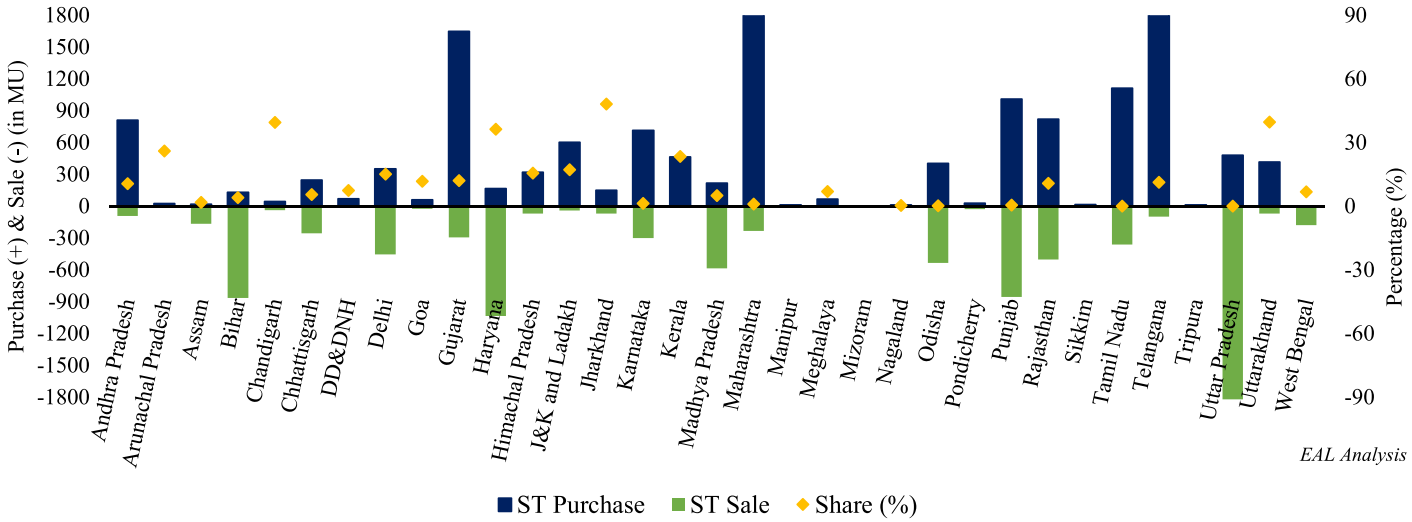


Weighted Average Prices of Short-term Transactions (July 2024-June 2025)



Monthly Power Purchase and Sale Quantum through Power Exchange across States

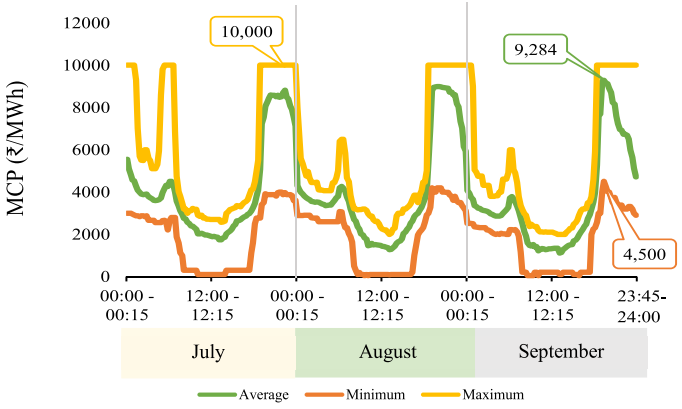
ST Energy Sale, ST Energy Purchase and share of ST Purchase on Total Energy Suppied (June 2025)



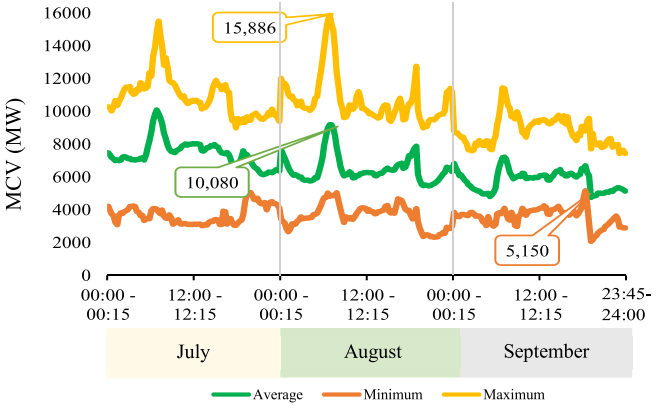
Power Market Overview & Analysis

DAM - Market Clearing Price (MCP) & Market Clearing Volume (MCV)

DAM Monthly Average, Maximum & Minimum MCP

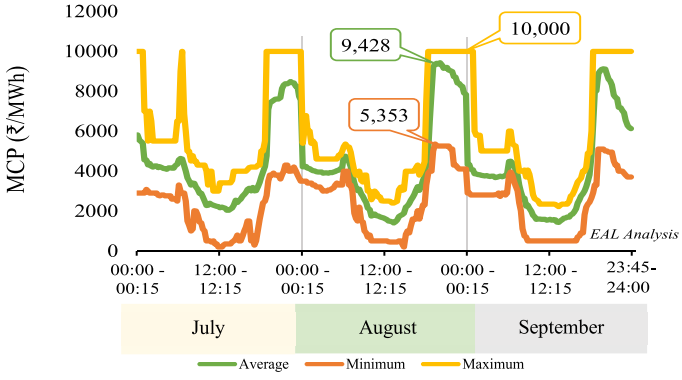


DAM Monthly Average, Maximum & Minimum MCV

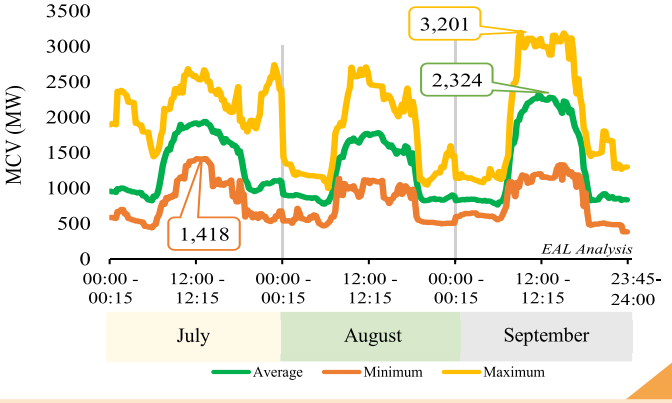


G-DAM- Market Clearing Price (MCP) & Market Clearing Volume (MCV)

G-DAM Monthly Average, Maximum & Minimum MCP

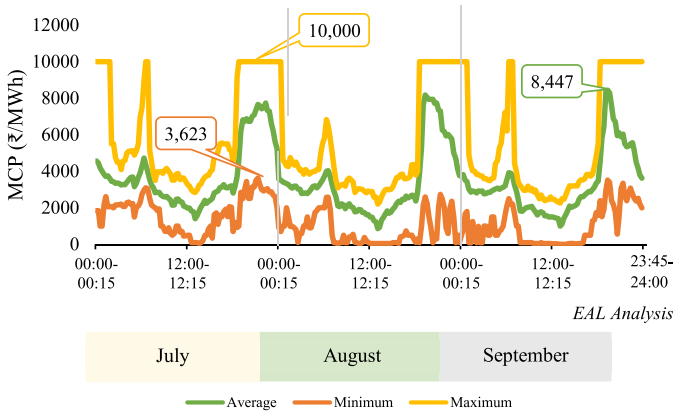


G-DAM Monthly Average, Maximum & Minimum MCV

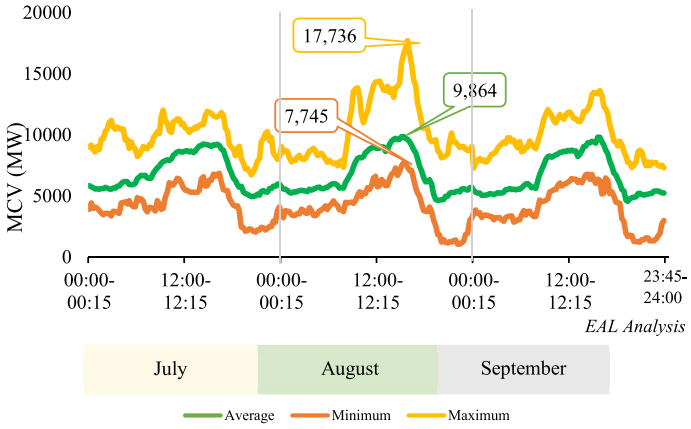


RTM -Market Clearing Price (MCP) & Market Clearing Volume (MCV)

RTM Monthly Average, Maximum & Minimum MCP

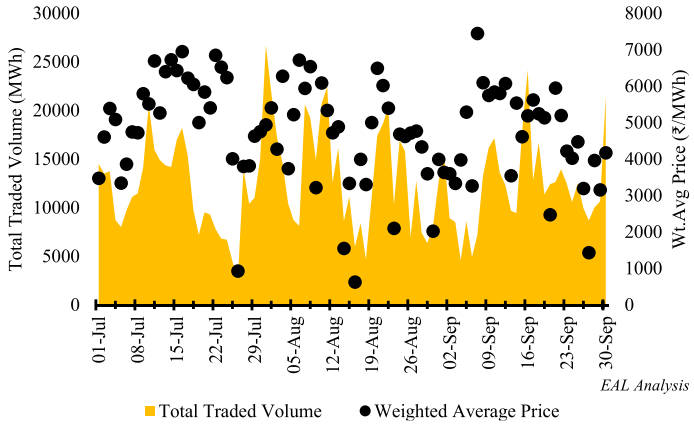


RTM Monthly Average, Maximum & Minimum MCV



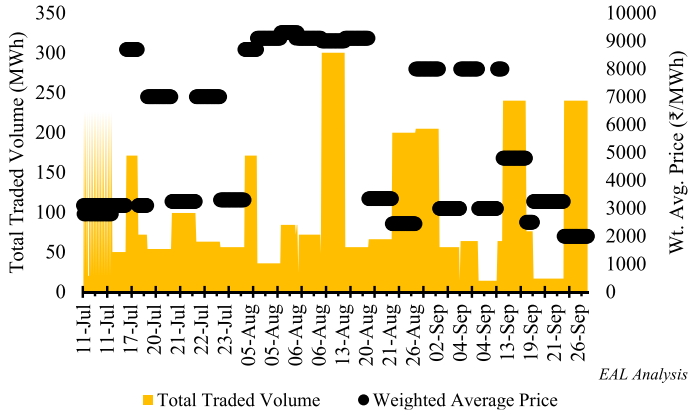
Term-Ahead Market

Day Ahead Contigency (July-Sept 2025)



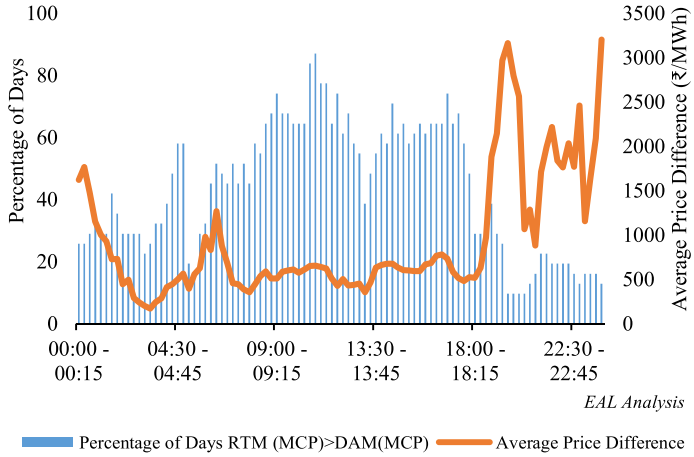
Green Term-Ahead Market

Daily Contracts (July-Sept 2025)

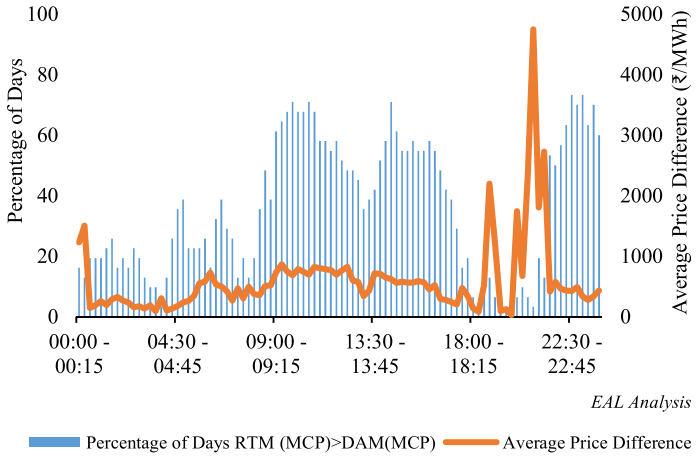


Price Difference between RTM & DAM

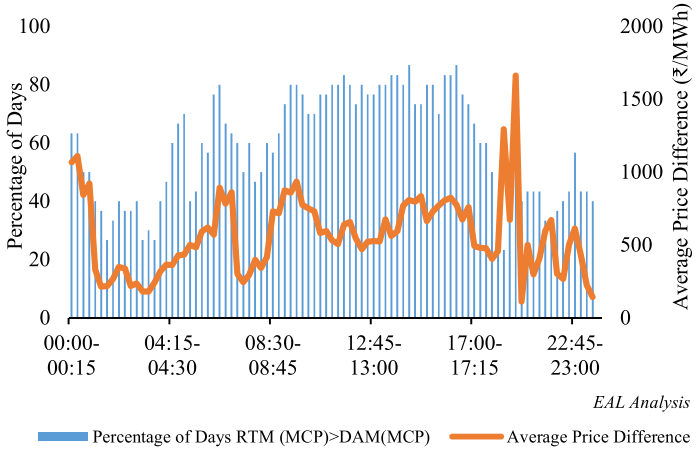
July 2025



August 2025



September 2025

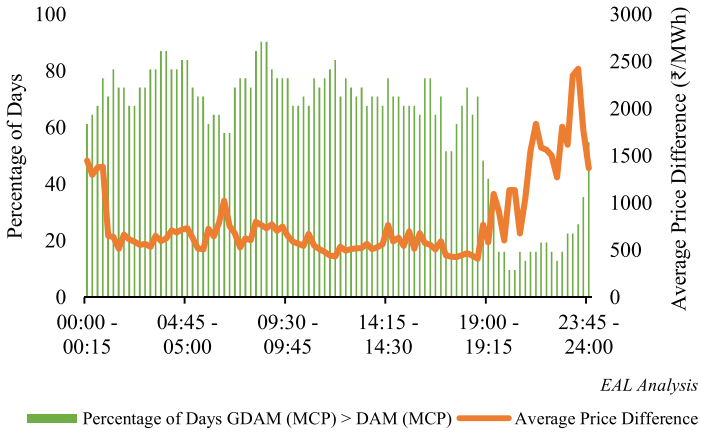


EAL Analysis

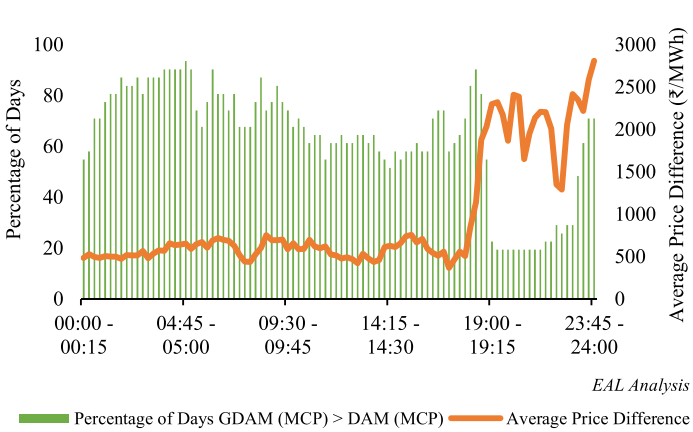
- The analysis is based on comparison between the average price difference of RTM and DAM, when MCP of RTM is greater than DAM for the second quarter of FY 2025-26.
- The graph shows the percentage of days, price for RTM is greater than DAM on the primary axis and the average price difference between the two on secondary axis.
- It has been observed that in 23:15-23:30 the highest average price difference is observed of RS. 4.7/ kWh for the month of August, 2025.
- The average price difference between RTM and DAM is Rs. 0.94/ kWh for the quarter.

Price Difference b/w GDAM vs DAM

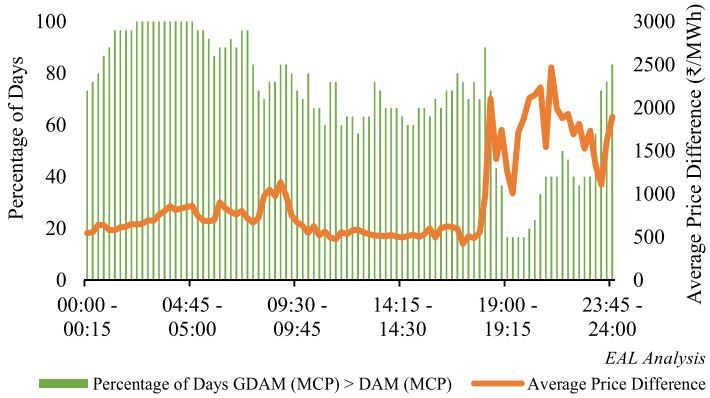
July 2025



August 2025



September 2025



EAL Analysis

- The analysis is based on comparison between the average price difference of G-DAM and DAM, when MCP of RTM is greater than DAM for the second quarter of FY 2025-26.
- The graph shows the percentage of days, price for G-DAM is greater than DAM on the primary axis and the average price difference between the two on secondary axis.
- It has been observed that in 23:45–24:00 the highest average price difference is observed of Rs. 2.80/kWh for the month of August 2025.
- The average price difference between G-DAM and DAM is observed to be Rs. 0.63/ kWh for the quater.

Opinion on CERC Notification on (Public Comments on Petition No. 685/MP/2025 filed by Indian Energy Exchange Ltd.)

Cite

The Central Electricity Regulatory Commission (CERC), invites comments, suggestions and objection on petition filed by Indian Energy Exchange (IEX) (Introduction of Peak Day Ahead Market (Peak DAM) and Peak Real Time Market (Peak RTM) at IEX Limited, issued on 4th August 2025. Key objectives of the petition are:

Objective: The IEX seeks to introduce the Peak Day Ahead Market (Peak DAM) and Peak Real Time Market (Peak RTM) on the IEX platform, with the aim of addressing peak-hour demand-supply imbalances, promoting participation of flexible resources such as Battery Energy Storage Systems and Pumped Storage Plants, facilitating market-based storage capacity addition, ensuring reliable power supply during deficit periods, and strengthening India's electricity market design through efficient price discovery and improved liquidity.

EAL Opinion

- **Market Segmentation and Market Entry Barrier:** In the proposed Clause 7(i) Eligibility: "*Energy storage sellers will be allowed to sell in Peak DAM segment. To begin with, the following categories of generators shall be eligible to participate*."

  Lower barrier to entry is the hallmark of competition in any market. Market segmentation lowers liquidity and competition, leaving it more prone to manipulation thus ultimately impacting the market outcome. By limiting seller participation, the product design would significantly undermine competition in Peak DAM segment. Demand response, co-located storage as well as high-cost generators would be equally eligible players for participation in the proposed market segment thus keeping it technology agnostic.

- **Eligibility for Demand Response, Co-located Storage and VPP:** Demand response, distributed renewable energy resources (through aggregators) as well as Virtual Power Plants (VPP)s) can also effectively supply demand side flexibility. Exclusion of such participation would limit liquidity as well as competition. Their inclusion would provide the much-needed impetus for emergence of Demand Response.

  RE generators with co-located storage as well as aggregated behind the meter-storage (including V2G) can also participate to supply in the Peak-DAM segment. This would further incentivize investment in co-located storage (with RE) and behind-the-meter storage.

- **Sequential Market Clearing:** The proposed sequencing of market segments G-DAM→DAM→Peak-DAM→HP-DAM would present a challenge for market participants in terms of bidding behavior. First, the demand side pipeline would be exhausted till it reaches HP-DAM, driving down its liquidity further. Second, due to differential eligibility criteria for participation in Peak-DAM and HP-DAM, Order Carry Forward (OCF) for gas and imported coal-based generators would have to be undertaken directly from DAM to HP-DAM as these generators are not eligible to participate in Peak-DAM (Figure 1). The proposal currently assumes otherwise.

Suggested Citation: Singh A. (ed.). (2025), Opinion on CERC Notification on (Public Comments on Petition No. 685/MP/2025 filed by Indian Energy Exchange Ltd.), Power Chronicle (Vol.08, Issue 02, pp. 7-9), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur.
https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_2.pdf
The arguments presented herein are equally applicable in the context of Peak-RTM as well.

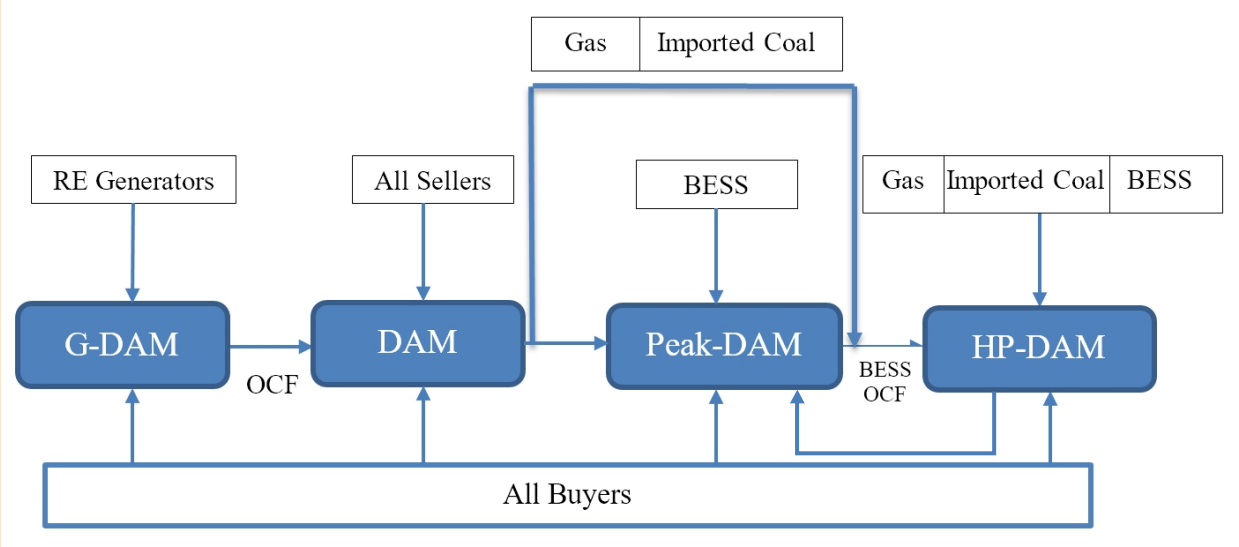


Figure 1: Sequential Market Clearing Process

- **OCF Based Bidding Pipeline for Buyers/Sellers:** To ensure that buyers, particularly the discoms are protected from potential abuse of the market power and do not end up taking sub-optimal decision detrimental to their interest, the buyers (particularly discoms) should participate in Peak-DAM and HP-DAM only through the OCF route from G-DAM/DAM route. Why should a buyer directly bid into an expensive source of supply, if its demand can be met through a market product earlier in the bid pipeline?

  Similarly, sellers should also follow the OCF route for bids in the market segments 'up the ladder'. The regulatory framework should mandate OCF based participation across market segments should be mandated through the Power Market Regulations. Alternatively, the power exchanges can propose the suggested OCF based bidding pipeline.

- **Market Segmentation - HP-DAM vs Peak DAM:** The HP-DAM was introduced as a separate market segment by bifurcating the DAM market on the basis of bid limits. It allows high variable cost (greater than the price cap of DAM) sellers to participate, whereas buyers can opt to auto-carry forward their uncleared bids from DAM to HP-DAM.

  Incentivising high-cost generation to reach the market particularly to meet peak demand was amongst the key arguments presented in its support. Another objective seemed to address 'undue' gains being made by low-cost generators in a uniform market clearing price mechanism[1].

  The Battery Energy Storage Systems (BESS), due to their high cost, are eligible to participate in the HP-DAM. As per CERC Order on Petition No. 359/MP/2022 on *"Petition under Section 66 of The Electricity Act, 2003 read with the Regulation 25 of the Central Electricity Regulatory Commission (Power Market) Regulations, 2021 for approval of introduction of the High Price Day Ahead Market (HP-DAM) in Integrated Day Ahead Market (I-DAM) segment at IEX."*

  "Accordingly, we decide that as now, the following categories of generating stations shall be eligible for participation in HP-DAM:(i) gas based generating stations using imported RLNG and Naphtha; (ii) imported coal based generating stations using only imported coal; and (iii) Battery Energy Storage Systems (BESS). The category of generating stations eligible to participate in HP-DAM shall be subject to periodic review by the Commission." ***(emphasis added)***

[1]Suggested Citation: Singh, A. (ed.). (2025), Opinion on Grid-India (Suggestions on Increasing the Frequency of REC Auction Sessions at Power Exchanges) [Draft], Power Chronicle (Vol. 08, Issue 01, pp.8-11), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

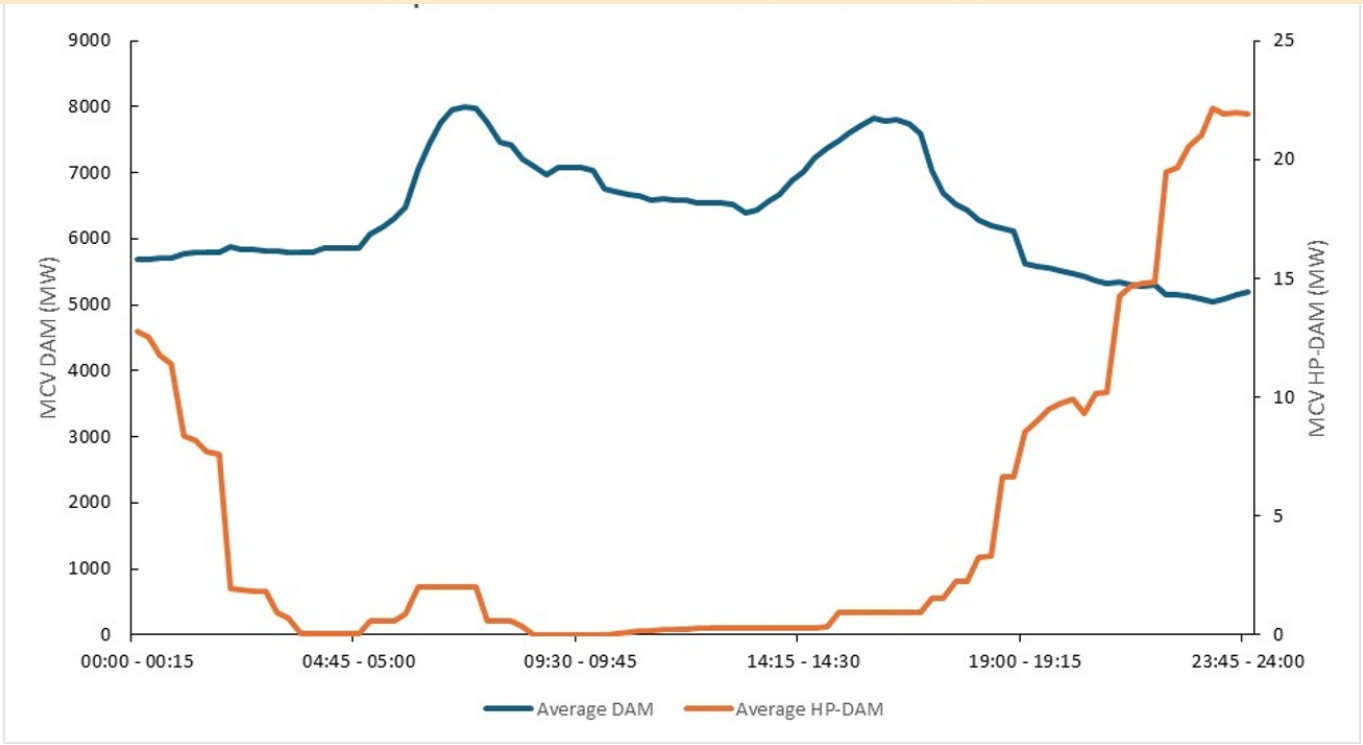


Figure 2. DAM and HP-DAM Volume (Mar 2023 – Aug 2025) on IEX

HP-DAM market segment has attracted very low activity and does not even account for one fourth percent of the same witnessed in the DAM market (Figure 2). Interestingly, most of the activity in HP-DAM is dominated by late evening and night hours. While very limited morning peak activity does coincide with the morning peak volume traded in the DAM, the same does not hold true for the evening peak.

This market segmentation has not produced desired outcome as participation in HP-DAM has remained limited so far largely due to limited appetite of buyers, especially the discoms. Peak DAM would further segment the market on the basis of participation eligibility bid limits. In fact, Peak DAM product is already embedded within HP-DAM. The only difference being an artificial barrier to entry which limits participation only to Energy Storage Systems as sellers. The presence of two products of similar nature is undesirable. Peak-DAM product would crowd out the existing prospects of HP-DAM driving liquidity away from it for the peak hours further diminishing its utility for the market participants. Is it proposed to discontinue HP-DAM in that case?

- **Regulatory Oversight and Market Monitoring:** Given some of the concerns related to lower liquidity and potential for market manipulation, vigilant regulatory oversight is necessary to prevent abuse of market power. The Commission should mandate submission of a report detailing cross-market participation for the related products especially participation in Peak-DAM and HP-DAM. This would enable the Commission to take a call on expanding eligibility for participation or merging the two market segments.

This market segment may also witness low liquidity with room for market manipulation as initial participation would remain limited till investment catches up in the ESS segment. Due to long-gestation period of PSP, the market would be characterised by participation from limited merchant players in the Battery Energy Storage System (BESS).

Opinion on Central Electricity Regulatory Commission (Power Market) (First Amendment) Regulations, 2025

Cite

The CERC notified draft on Power Market (First Amendment) Regulations, issued on 17th June, 2025. The main objectives of the proposed regulations are:

Objective: The CERC seeks to strengthen the evolving framework of electricity trading by expanding role of Over-the-Counter (OTC) platforms and incorporating Virtual Power Purchase Agreements (VPPAs). The amendment aims to promote innovation in market instruments, and provide flexibility for buyers and sellers through structured contracts. By enabling consumers to participate in VPPAs and empowering OTC platforms to facilitate a wide range of bilateral contracts and aligning with existing provisions with the Connectivity and General Network Access (GNA) framework, the amendment aims to promote transparency, market accessibility, and competition.

EAL Opinion

- **Disparity in Financial and Technical Requirements & Compliance Symmetry between OTC Platforms and Trading Licensees:** There is a lack of balance and uniformity in the financial, technical, and compliance requirements imposed on OTC Platform Operators as compared to Trading Licensees. While Trading Licensees must meet category-wise net worth thresholds based on volume (ranging from ₹2 crore to ₹75 crore), OTC Platforms are proposed to have a flat net worth requirement of ₹35 crores with no cap on trading volume. This may create a regulatory arbitrage. **The obligations and qualification criteria should be aligned across market participants.**

  There seems to be an anomaly between the regulatory obligations of Trading Licensees and OTC Platforms in terms of reporting, disclosure and financial compliance. Trading Licensees are subject to monthly trading reports, payment security enforcement, and trading margin regulations. OTC Platforms, despite facilitating substantial market transactions (including VPPAs, BESS, banking contracts), have limited reporting and disclosure mandates in the public domain. A more uniform and transparent compliance structure should be implemented for OTC Platforms, particularly concerning market data and transaction disclosures, to prevent regulatory evasion and ensure market integrity.

- **Clarification on Volume Cap Applicability to VPPA Transactions:** In the current draft, VPPAs are allowed to be facilitated by both Trading Licensees and OTC Platforms. However, the applicability of annual trading volume limits (e.g., 500 MU for Category V Licensee) as per clause (3)(2) of CERC (Procedure, Terms and Conditions for Grant of Trading License and Other Related Matters) Regulations, 2020 to VPPA-linked energy transactions is not clarified.

  A situation may arise where a Category V[2] trader with a low net worth (e.g., ₹5 crore) facilitates high-volume VPPAs without such transactions being counted toward its licensed MU limit. This may create a perverse incentive and undermine the category-based trading volume thresholds. The regulations should clarify whether volume under VPPAs will be counted toward the annual trading volume. While VPPs are long-term transactions, how would annualised volumes be considered against each such transaction to be 'brokered' by the respective intermediaries like the traders and the OTC platforms.

Suggested Citation: Singh A. (ed.). (2025), Opinion on CERC Notification on (Power Market) (First Amendment) Regulations, 2025, Power Chronicle (Vol.08, Issue 02, pp.), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur.
https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_2.pdf

[2]Page no. 5, CERC (Procedure, Terms and Conditions for Grant of Trading Licence and Other Related Matters) Regulations, 2020 cercind.gov.in/2019/regulation/154.pdf

- **Potential Backdoor Entry to Power Market via Low-Cost OTC or Trader Licence?:** In the proposed Clause 8.1 (b) of Regulation 43, *"The minimum Net worth of the applicant shall be Rs. 35 Crore as on any date falling within 30 days immediately preceding the date of filing the application for grant of registration."*

  The current structure appears to create a low-cost backdoor into the power trading market. OTC platforms with only a ₹35 crore net worth and no volume cap, or Category V Trading Licensees with just ₹2 crore net worth, could potentially conduct large-scale VPPAs and similar transactions with minimal oversight. If these entities offer functionally similar services to high-category traders or exchanges, the absence of parity in their obligations and financial exposure may distort the regulatory architecture. **CERC may assess if this may lead to 'parallel licensing regimes' which may be used to bypass stricter norms of trading licenses or exchange operations.**

- **Definition of 'Facilitation' by OTC Platforms:** In the proposed Clause 1 (ap) of Regulation 2 *"Over the Counter (OTC) Platform" is an electronic platform for exchange of information amongst the buyers and sellers of electricity, and for **facilitating** the buyers and the sellers to engage in transactions as specified in these Regulations and the Guidelines for OTC Platform;" (Emphasis added)*

  The revised definition of OTC Platform introduces the term "facilitation" but does not explain it in sufficient detail. It is unclear whether this facilitation includes transaction structuring, commercial negotiation, document execution, or only listing/matching services. Additionally, the draft remains silent **on whether the Commission will specify or cap the service fees/facilitation charges recoverable by OTC operators**. A clear regulatory definition of "facilitation" and a framework for permissible charges are required to ensure transparency and prevent abuse.

- **Price Discovery in Case of VPPA Must Be Exchange-Based for Transparency:** In the proposed Clause 2 (a) of Regulation 2 *"Virtual Power Purchase Agreement (VPPA) means the non-transferable specific delivery (NTSD) based Over-the-Counter (OTC) contracts entered between a Consumer or Designated Consumer and a RE generator, wherein, the Designated Consumer guarantees payment of the mutually agreed price (VPPA price) to the RE generator for the entire duration of the agreement. The RE generator shall sell electricity through Power Exchange or any other mode authorized under the Electricity Act 2003, and the difference between the VPPA price and the market price shall be settled bilaterally between the contracting parties as per mutually agreed terms;"*

  As per the draft VPPA definition, the RE generator may sell power "through Power Exchange or any other mode authorized under the Electricity Act." This provision may dilute the core principle of market-linked price discovery. If the power is sold through bilateral routes (e.g., through traders or OTC platforms), the discovered price may be opaque, non-verifiable, and open to manipulation. **Allowing VPPA-linked energy to be sold only via Power Exchanges would ensure transparent price discovery and protect against future disputes around VPPA settlement.**

- **Absence of Regulatory Tools for Non-Compliance with VPPA Guidelines by Voluntary Buyers:** The draft guidelines enforce strict compliance for DISCOMs but are unclear about enforcement mechanisms for non-obligated entities (such as open access consumers or corporates) entering into VPPAs on a voluntary basis. In cases where such entities deviate from the VPPA guidelines, what corrective powers will the Commission have? Will such VPPAs be deemed non-compliant, disallowed, or nullified? **Clear guidance is needed on the enforceability and consequences for non-compliance by voluntary participants.**

- **Innovation in VPPA Pricing Models Must Be Permitted:** The draft appears to adopt a rigid approach by expecting VPPAs to follow the guidelines "in-toto." While such prescription may be needed for DISCOM procurement under Section 86 of the Electricity Act, 2003, the same should not apply to voluntary, private, or corporate **VPPA transactions. CERC should explicitly provide space for innovative VPPA pricing approaches including peak-hour contracts, asymmetric settlement windows, indexed pricing** to allow commercial flexibility based on participants' need.

- **Net Worth Audits and Volume-Based Compliance:** In the proposed Clause 1 of Regulation 53, *"The Commission may at any time undertake inspection, conduct inquiries or audit of any Power Exchange or OTC*

Platform, either through its officers or through a third-party agency, in accordance with the provisions of the Act."

Given the scale of transactions, OTC platforms may facilitate, such platforms should be required to submit quarterly reports on the transactions, audited balance sheets to demonstrate continued compliance with net worth requirements, especially if they facilitate VPPAs, BESS, and other market-sensitive contracts. Similar to Trading Licensees, they must also report volume of energy facilitated in public domain, to ensure regulatory oversight.

- **Level Playing Approach to Regulation:** The draft amendment places OTC platforms in a position where they facilitate energy transactions (VPPAs, BESS, delivery-based contracts), handle structured documentation, and bring together counterparties, much like Trading Licensees and Power Exchanges, but without bearing any counterparty or credit risk. This **introduces asymmetry in regulatory burden. If OTC platforms are allowed to play a quasi-trader or quasi-exchange role, they should be subject to commensurate technical and reporting standards.**

Power Lexicon

Power Market

1. General Network Access (GNA)

Regulatory mechanism under which a generating company, distribution licensee, bulk consumer, or other eligible entity is granted non-discriminatory access to the inter-State transmission system (ISTS) in India. This access allows the entity to inject or draw electricity using the ISTS network, subject to the procedural, technical and commercial requirements specified in the GNA regulations.

2. Over the Counter (OTC) Platform

An **OTC Platform** is an electronic platform that provides information and facilitates interaction between buyers and sellers of electricity for transacting bilateral contracts outside power exchanges. The platform does **not** negotiate, execute, clear, or settle contracts, but acts as a neutral medium for identifying counterparties and supporting transparent market participation.

Under the proposed CERC (Power Market) (First Amendment) Regulations, 2025, the **OTC Market** shall consist of the following instruments:

- Delivery-based Energy Contracts
- Capacity Contracts
- Renewable Energy Certificate (REC) Contracts
- Virtual Power Purchase Agreements (VPPAs)
- Battery Energy Storage System (BESS) Contracts
- Banking of Power
- Any other contract approved by the Commission

These instruments enable flexible, customised power procurement arrangements, especially suited for entities seeking negotiated terms instead of exchange-discovered prices.

3. Power Market

The platform or a place where buyers and sellers, either directly or through Trading Licensees, or through Power Exchanges, or through OTC Platforms, buy or sell electricity, Renewable Energy Certificates, Energy Savings Certificates, or any other product as may be decided by the Commission.

4. **Virtual Power Purchase Agreement (VPPA)**

A VPPA is a financial contract in which a buyer agrees to pay a mutually agreed price (VPPA price) for the renewable energy generated with a RE Generator, later the generator sells the electricity into the market. The RE generator receives the market price for the electricity generated and,

The difference is paid to the RE generator by the buyer, If VPPA Price > Market Price,

The difference is paid to the buyer by the RE generator, If VPPA Price < Market Price

Where, Difference = |VPPA Price - Market Price|*Quantum of Energy Sold

This structure provides the buyer with protection against electricity price volatility while allowing the project to secure stable revenue. Along with this, the buyer receives the Renewable Energy Certificates (RECs), representing the green attributes of the electricity produced.

5. **High Price Day Ahead Market (HP-DAM)**

The High Price Day-Ahead Market (HP-DAM) is a separate segment of the DAM that allows high variable cost generators, such as gas-based, imported coal-based plants, and storage resources, to bid above the standard DAM price ceiling. Bids in HP-DAM can go up to the higher regulated price limit, enabling these sources to operate when market conditions are tight. The segment ensures additional supply availability during periods of high demand or system stress, supporting grid reliability while providing transparent price signals for procuring higher-cost power when needed.

6. **Peak Real Time Market (Peak-RTM)**

The IEX Ltd. in its petition to the CERC, proposes the need for Peak-RTM due to sudden demand fluctuations during peak hours, enabling better balancing, reduced price spikes, and improved grid reliability in near real-time.

Peak-RTM is an additional proposed segment of the RTM that allows participants to trade electricity closer to delivery during peak demand intervals. It permits battery energy storage systems, pumped hydro storage systems and sellers eligible to participate in HP-DAM to sell, buyers to procure, electricity. After RTM clearing, unselected bids can be shifted to Peak-RTM with flexible prices under Order Carry Forward (OCF) option.

Peak-RTM follows the same risk management, pricing, scheduling, and settlement rules as RTM, with bidding for two 15-minute blocks per session.

7. **Peak Day Ahead Market (Peak-DAM)**

Peak-DAM is a proposed separate segment within the DAM that enables trading of electricity specifically for peak demand hours. It allows eligible participants such as battery energy storage systems, pumped hydro storage systems and sellers eligible to participate in the HP-DAM. Bidding takes place from 10:00–11:00 AM a day before delivery, with price discovery occurring after GDAM and DAM. Participants can also transfer unselected DAM bids to Peak-DAM at flexible prices under OCF option.

It is needed to provide a more accurate price signal during high-demand periods, improve procurement planning for buyers, and incentivize generators to supply during peak hours, where system stress and price volatility are typically higher.

8. **Market Cleared Volume (MCV)**

The total quantum of electricity (in MW or MWh) that is successfully matched and cleared in a power exchange auction for a given time block, based on the intersection of the demand and supply curves under unconstrained conditions.

9. **Market Clearing Price (MCP)**

The uniform price (₹/MWh or ₹/kWh) discovered at which total quantity demanded equals total quantity supplied in the market. It is the price at which electricity is traded for a given time block.

10. Renewable Energy Certificates (REC):

A Renewable Energy Certificate (REC) is like a green proof or token showing that one unit of electricity (1 MWh) was produced from renewable sources such hydro, wind, solar including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste and such other sources as recognized or approved by the Central Government. These certificates can be traded, meaning a company that cannot produce renewable power can buy RECs to meet its Renewable Purchase Obligation (RPO).

Example: If a solar plant generates 100 MWh of power, it receives 100 RECs. A factory using coal power can buy these RECs to show it supported renewable energy generation. However, if renewable energy is used to charge a battery, no new RECs are issued to avoid double counting.

Deviation Settlement Mechanism

1. Available Capacity

Available Capacity for generating station based on wind or solar or hybrid of wind-solar resources, which are regional entities, is the cumulative capacity rating of wind turbines or solar inverters that are capable of generating power in a given time block.

2. Qualified Coordinating Agency (QCA)

A QCA is an agency that represents several wind or solar generators connected at a common pooling station. It acts as a single point of contact between the generators and the State Load Dispatch Centre (SLDC). The QCA is responsible for submitting generation schedules, sharing metering and data information, handling payments or penalties for deviation, and distributing settlement amounts among the generators. The QCA is treated as a state entity and must be registered with the SLDC.

Example: If five wind farms share one grid point, they can appoint one company as the QCA to handle scheduling, data transfer, and financial settlements on behalf of all.

3. Partial Open Access Consumer

Refers to a consumer who buys part of their electricity from the local distribution company (DISCOM) and the rest directly from another generator through open access using the transmission system.

4. Contract Rate

The contract rate is the price agreed for selling or purchasing electricity, expressed in rupees per kilowatt-hour (₹/kWh). The rate depends on how the electricity is sold, it could be a tariff approved by the regulatory commission, a price discovered in the power exchange, or the average market price for direct sales to third parties or captive use.

Example: A solar plant sells half its power to the DISCOM at ₹3.00/kWh and the rest on the power exchange at ₹5.00/kWh. The contract rate is the weighted average of the two prices.

5. Reference Charge Rate (RR)

The reference rate is the benchmark price used for final deviation settlements. It depends on how the power is sold, it can be the approved tariff for regulated plants, the price discovered on the power exchange, or the average market rate for captive plants or in case of multiple contracts or transactions including captive consumption, the weighted average of the reference rates of all such contracts or transactions

6. Computation of Deviation

- **For General Sellers (**generating station based on resources other than wind or solar or hybrid of wind-solar resources**):**

  Deviation (MWh) = Actual Injection – Scheduled Generation
  Deviation (%) = 100 × (Actual Injection – Scheduled Generation) / Scheduled Generation

- **For WS Seller (**a generating station based on wind or solar or a hybrid of wind-solar resources and shall include such solar or wind or hybrid generating station, with or without storage**):**

a) For the period from the date of commencement of these regulations to 31.03.2026

Deviation (MWh) = Actual Injection – Scheduled Generation
Deviation (%) = 100 × (Actual Injection – Scheduled Generation) / Available Capacity

b) For the period from 01.04.2026 onwards

Deviation (MWh) = Actual Injection –Scheduled generation

Deviation (%) = 100 x [(Actual Injection in MWh) – (Scheduled generation in MWh)] / [(X% of Available Capacity) + (100 - X) % of Scheduled Generation)]:

Provided 'X' shall be stipulated by the Commission through separate order(s) after public consultation.

- **For Buyers:**
Deviation (MWh) = Actual Drawl – Scheduled Drawl
Deviation (%) = 100 × (Actual Drawl – Scheduled Drawl) / Scheduled Drawl

7. Normal Rate (NR) of Deviation Charges

NR for a particular time block is the highest of
(A) Weighted Average Day-Ahead Market (DAM) price,
(B) Weighted Average Real-Time Market (RTM) price, or
(C) Weighted Average of ⅓ DAM + ⅓ RTM + ⅓ Ancillary Service Charge.

8. Storage Obligation

Energy Storage Obligation (ESO) is a regulatory requirement that mandates certain electricity consumers, such as distribution licensees, open-access users, and captive power consumers, to integrate or procure a specified portion of their electricity through energy storage systems. The purpose of ESO is to enhance grid flexibility, support renewable energy integration, improve reliability, and ensure optimal utilization of renewable power. Under this obligation, entities must use energy storage systems such as batteries or pumped hydro, to store and supply electricity, particularly from renewable sources, thereby promoting stability and sustainability in the power system.

9. Infirm Power:

The electricity generated and supplied prior to the commercial operation of a unit of a generating station, which may be allowed for testing, trial runs, or initial synchronization with the grid.

2nd Capacity Building Programme for LDCs "Regulatory and Policy Framework in the Indian Power Sector: Load Despatchers' Perspective"

The Centre for Energy Regulation (CER), in collaboration with Grid-India, successfully conducted the 2nd Capacity Building Programme for Load Despatch Centres (LDCs) from 24th to 26th July 2025.

The three-day programme aimed to enhance the understanding of evolving regulatory and policy frameworks in the Indian power sector from the LDCs' perspective. It also provided a platform for knowledge exchange, learning about best practices, and engagement with leading experts. Key speakers included Mr. Sushil Kumar Soonee (Former and Founder CEO, POSOCO), Mr. Rohit Bajaj (Joint Managing Director, IEX), Mr. Rajiv Porwal (Director (System Operation), Grid-India), Ms. Shilpa Agarwal (Joint Chief (Engineering), CERC), Mr. Apoorva Anand (Deputy Director, CEA), Dr. K. Balaraman (Former Director General, NIWE) and Prof. Anoop Singh (Founder and Coordinator, CER and EAL, IIT Kanpur)

The programme covered key topics including the Electricity Act, 2003, National Policies, Power Market Operations, Deviation Settlement Mechanism, Grid Code implementation, Ancillary Services, Resource Adequacy, Transmission Pricing, and RE Forecasting. Participants also visited CER and EAL labs at IIT Kanpur.

The programme concluded with a Valedictory Session, graced by Mr. Samir Chandra Saxena, CMD, Grid-India, who distributed certificates and shared valuable insights on policy and regulatory trends shaping the Indian power sector.

Regulatory Certification Programme on "Power Market Economics and Operation"

CER, in collaboration with EAL, conducted the 5th Regulatory Certification Program titled "Power Market Economics and Operation" from 30th August to 17th September 2025, organized under the aegis of the Office of Outreach Activities, IIT Kanpur. This online program provides insights to the economics, operation, Power Procurement Planning, Deviation settlement Mechanism, Power system Operation, Resource Adequacy, Derivatives and More.

The inaugural session was graced by Mr. Ravinder Singh Dhillon Member (CERC), Former CMD, PFC Ltd., as the Chief Guest.

Key speakers included Dr. Sushanta Chatterjee, Mr. Sushil Kumar Soonee, Ms. Shilpa Agarwal, Mr. Dhruv Dhiman, Mr. Shathish Vasudev, Mr. Nishant Singhal, Mr. Ghanshyam Prasad, Mr. Ajay Talegaonkar, Mr. Abhishek Ranjan, Mr. Ashish Bhagtani, Dr. Srikant Nagulapalli, Mr. Rajiv Porwal , Mr. Rajat Goel, and Prof. Anoop Singh .

Mr. Manu Srivastava, Additional Chief Secretary (Department of New & Renewable Energy, Government of Madhya Pradesh) graced the valedictory function as Chief Guest, presented certificates to the participants, and highlighted the importance of informed decision-making and the advancement of regulatory frameworks in the power market Economics and operation.

Regulatory Certification Programme on "Renewable Energy: Economics, Policy and Regulation"

Registration is now open for the 3rd RCP on "Renewable Energy: Economics, Policy and Regulation" scheduled from 13th December, 2025 to 9th January, 2026. The program on Renewable Energy Regulation focuses on regulatory and policy framework for Renewable Energy (RE).

For more information and registration

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