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Power Chronicle

Strengthening Market Design and Regulatory Frameworks for a Renewable-Driven Power System

Editorial

Uncertainty associated with demand forecast for renewable energy, whose share is expected to rise even further, continues to pose a challenge to the system operation. While deviation settlement mechanism (DSM) aims to address the system imbalances, there are limited market based opportunities to manage such deviations by the RE generators closer to the time of delivery. The energy storage system (ESS), which currently makes a limited contribution in addressing such imbalances, is expected to become more discernible in future with declining costs. The proposed Green RTM would provide a market-based solution particularly for the RE generators, to address expected imbalances closure to the time of the delivery. This would also effectively enhance the balancing area to even out the forecasting errors across geographically separated RE generators.

Expansion of trading sessions for the REC market will enhance market liquidity. Further effort should aim at adoption of competitive price discovery mechanism in place of the existing continuous matching framework. A reverse auction mechanism would open a new window for cost effective procurement of RECs by the obligated entities, particularly distribution licensees. Reserve price for such reverse auctions should be tied up with the preceding REC trading sessions, thus necessitating alignment of the reverse auction calendar with the REC trading sessions.

While the reverse auction mechanism would enhance competition, improve price discovery, and drive efficiency in the REC market, it's success will depend on robust contract design and transparent bidding framework. Sufficient and advance disclosure of the reverse price bids, simultaneity of the reverse auction contract bids with the same reserve price would be crucial for a robust and transparent mechanism. Multiplicity of exclusive reverse auctions should be avoided, as this would compromise market liquidity and hinder competitive price discovery.

Growing footprint of the REC market, emergence of multiple contract, including reverse bidding, which tied to a reserve price linked to the preceding REC trading session, may also leave the market susceptible to potential manipulation. The regulatory framework for robust market monitoring should be able to identify and prevent any such market behaviour.

The Virtual Power Purchase Agreements (VPPA) would fill a void in the existing market mechanism while unlocking RE investment potential in the country. Buyer entities tied up with the VPPAs may end up with surplus RECs due to variation in electricity consumption, as well as variability of RE generation. Provision for trading of excess RECs beyond the legal obligation would provide necessary flexibility to buyers and enhance the attractiveness of VPPAs. With the emergence of the derivatives markets (futures), a new set of financial instruments is now available for risk hedging by the parties' entering into the VPPAs, that may further enhance acceptability for such arrangements.

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Founder & Coordinator, Energy Analytics Lab

Key words: Bucket Filling, Price Discovery, Congestion Pricing, Ramp Rate, Energy Storage System (ESS), Market Clearing Price (MCP), REC Reverse Auction, Real-time Grid Monitoring, Energy Accounting & Settlement.

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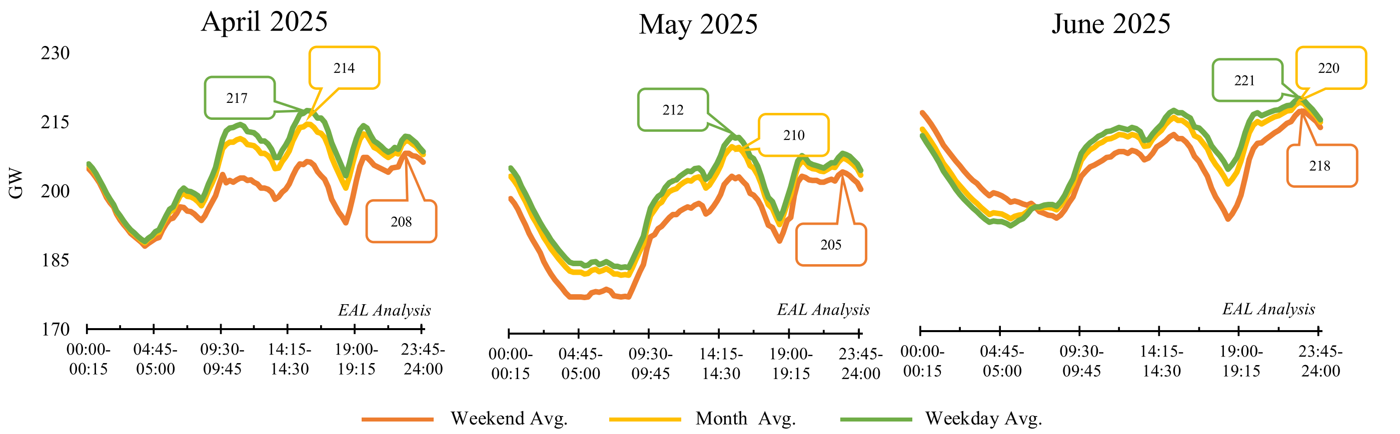
Power System Overview & Analysis

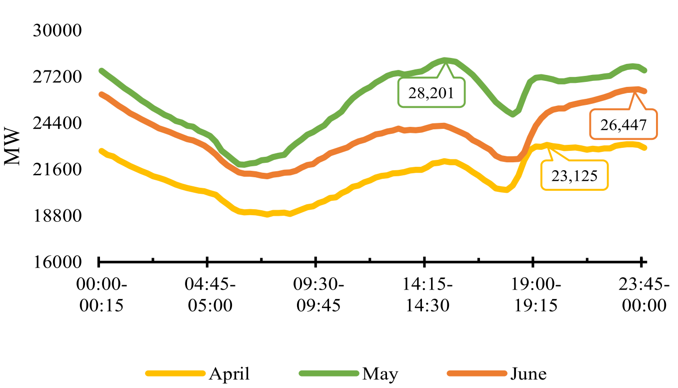
All India Demand Met Profile



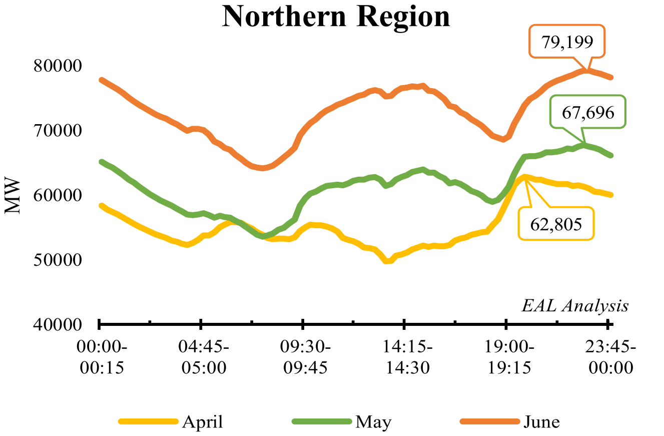
From April to June quarter, all India peak demand reached 242 GW (16:00 - 16:15) on 12th June, 2025, about 2.8% lower than the previous year's peak demand recorded at 249 GW (14:30 - 14:45) on 30th May, 2024, during the same quarter.

Region-wise Demand Met Profile

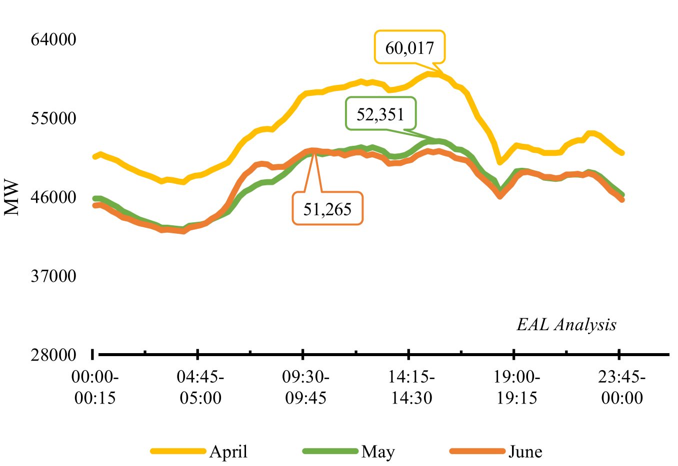
Eastern Region



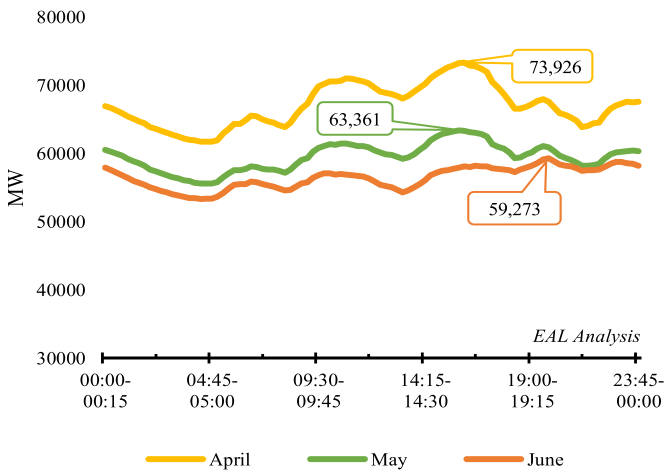
Northern Region



Southern Region

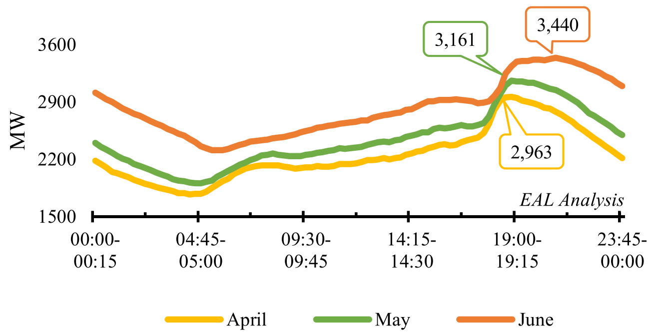


Western Region



For more information Click here

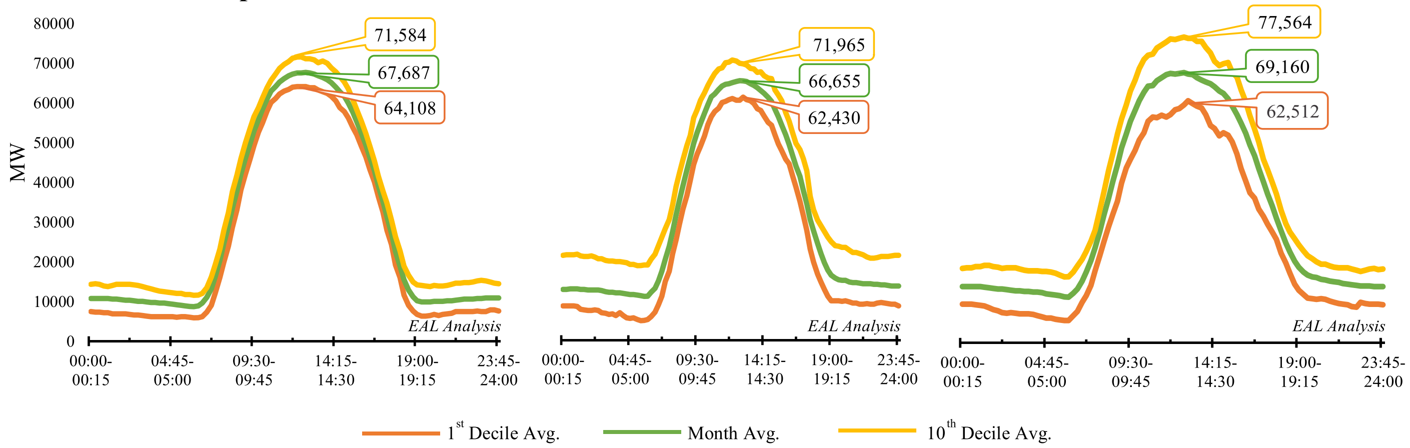
North Eastern Region



- Significant increase in demand can be observed for Northern region from 19:00 to 21:45 hrs in June and Eastern region from 10:15 to 14:00 hrs in May.
- Gradual decrease in demand can be observed for North Eastern from 21:00 to 23:00 hrs in all the three months respectively.
- Average demand is found to be higher for Northern region as compared to the other regions in the month of June.

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

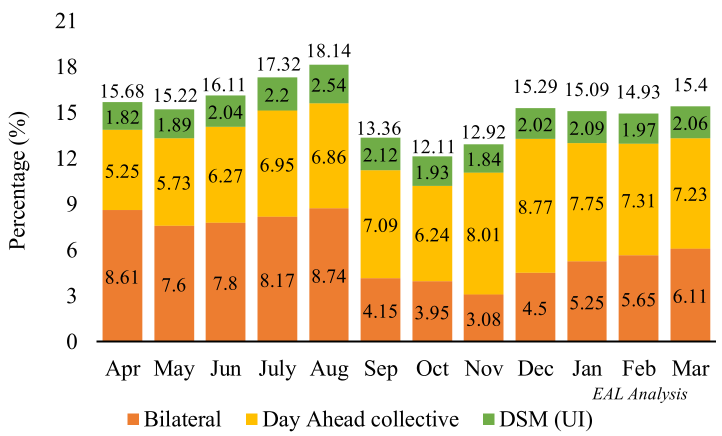
All India Renewable Energy Generation Profile



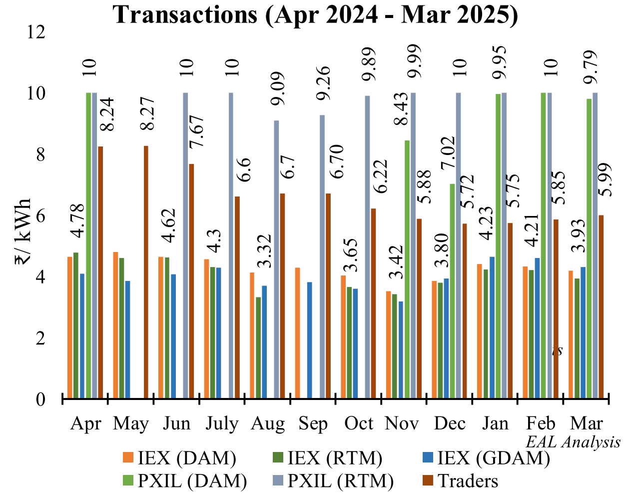
All India peak RE generation reached 82.29 GW (13:15 - 13:30) on 02nd June, 2025, about 12.74% higher than the previous year's peak of 72.99 GW (12:00 - 12:15) on 28th May, 2024.

Short-term Energy Transactions

Share of Short-term Energy Transaction of Total Electricity Generation (Apr 2024 - Mar 2025)

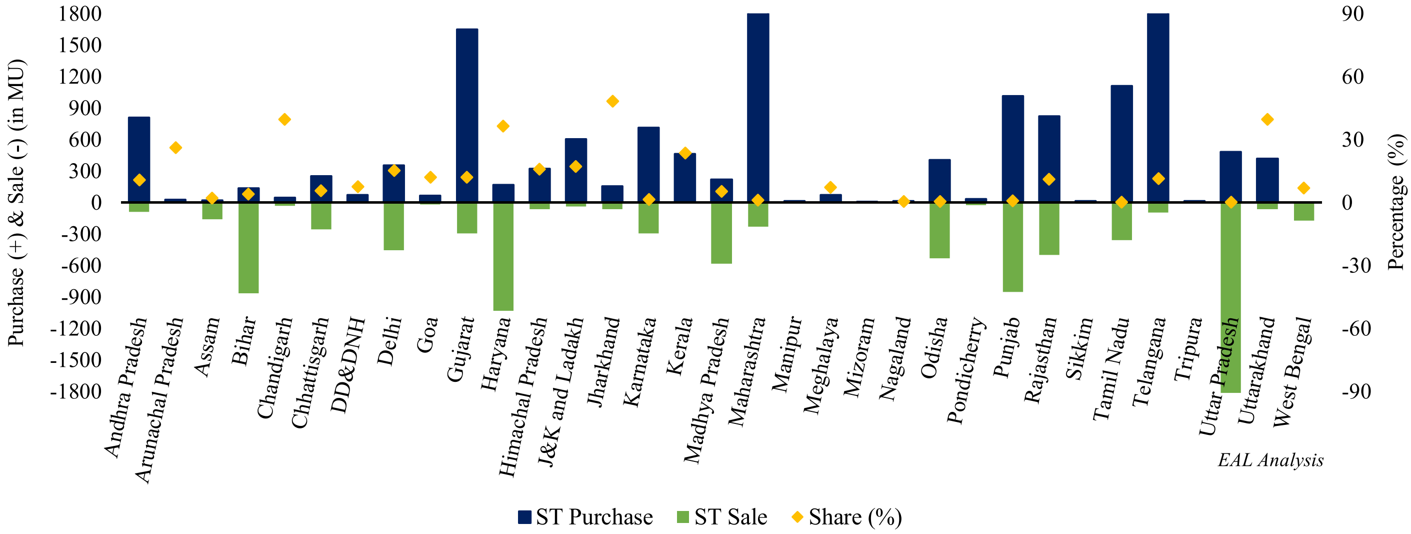


Weighted Average Prices of Short-term Transactions (Apr 2024 - Mar 2025)



Monthly Power Purchase and Sale Quantum through Power Exchange across States

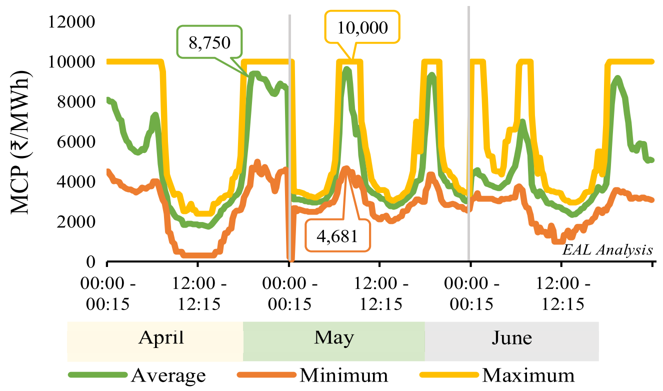
ST Energy Sale, ST Energy Purchase and share of ST Purchase on Total Energy Supplied (March 2025)



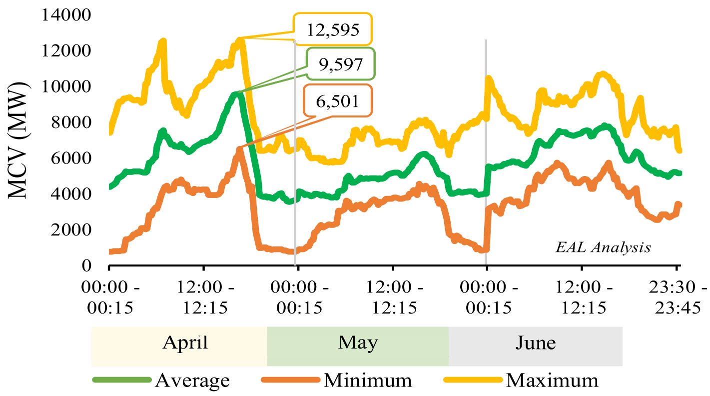
Power Market Overview & Analysis

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

DAM Monthly Average, Maximum & Minimum MCP

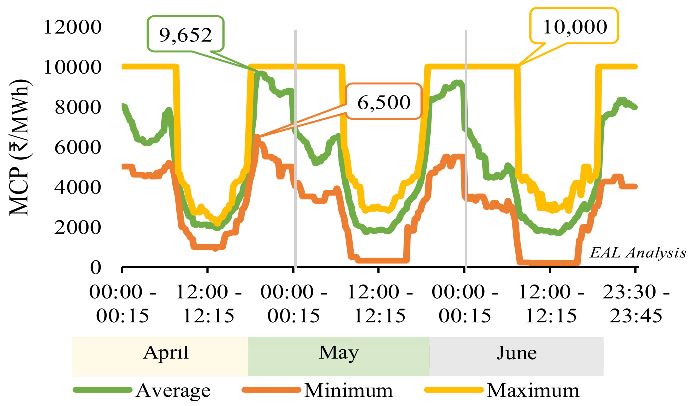


DAM Monthly Average, Maximum & Minimum MCV

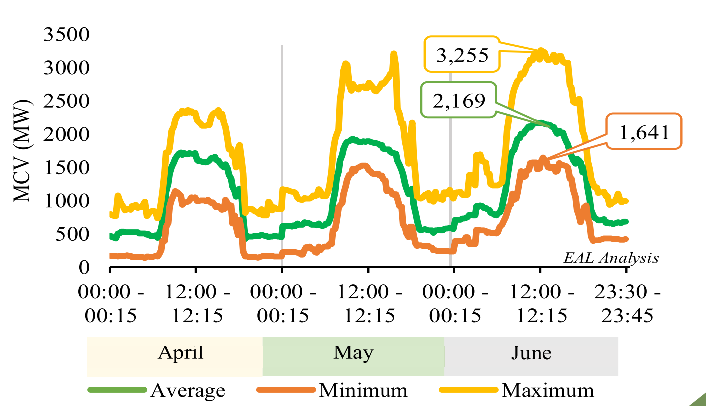


G-DAM- Market Clearing Price (MCP) & Market Clearing Volume (MCV)

G-DAM Monthly Average, Maximum & Minimum MCP

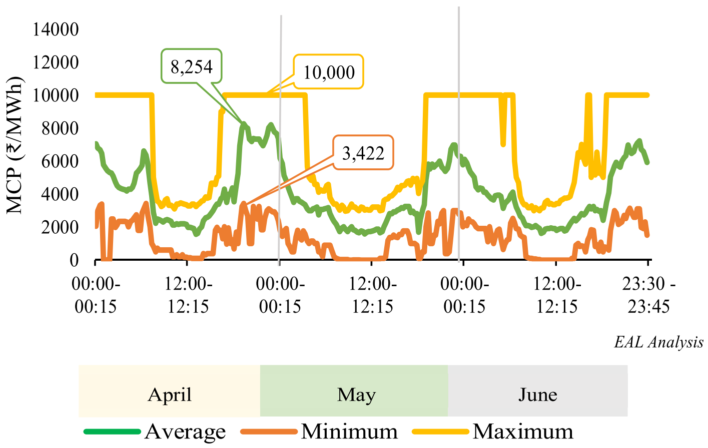


G-DAM Monthly Average, Maximum & Minimum MCV

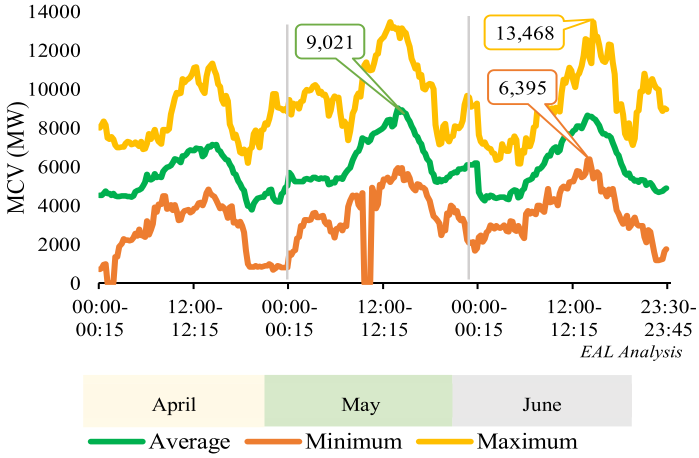


RTM -Market Clearing Price (MCP) & Market Clearing Volume (MCV)

RTM Monthly Average, Maximum & Minimum MCP

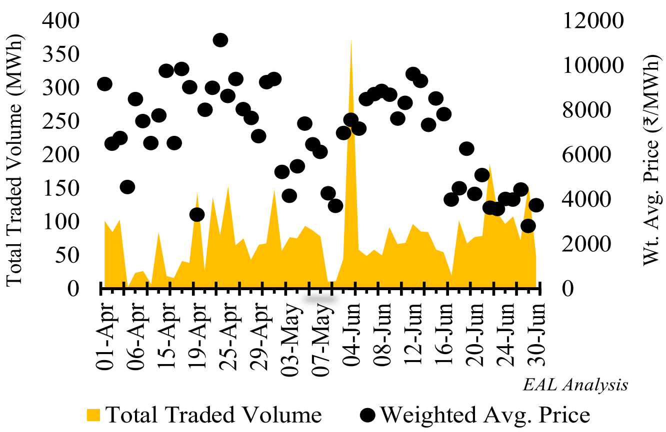


RTM Monthly Average, Maximum & Minimum MCV



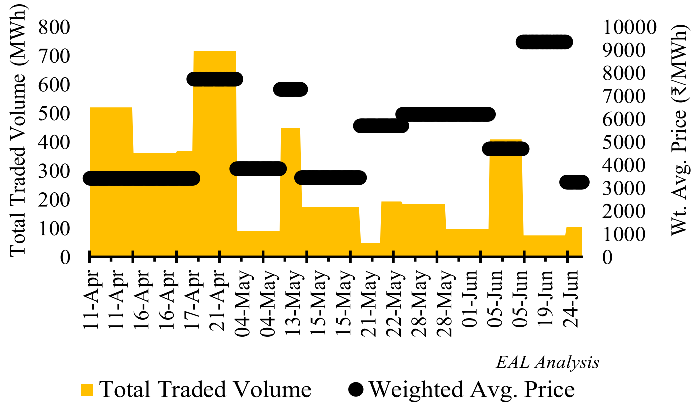
Term-Ahead Market

Day-Ahead Contigency (Apr-Jun 2025)



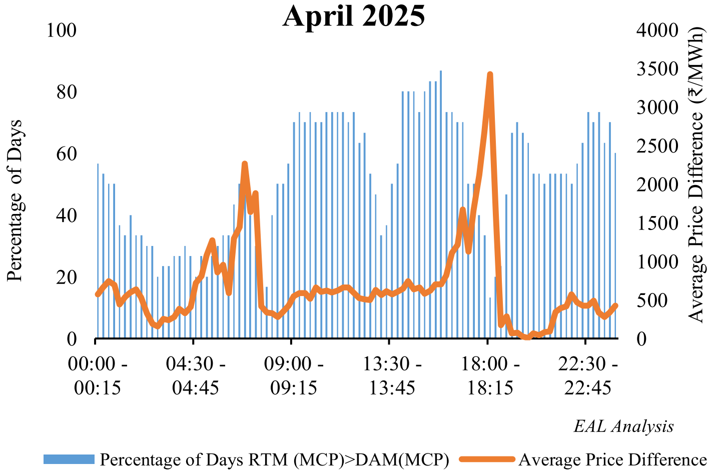
Green Term-Ahead Market

Daily Contracts (Apr- Jun 2025)

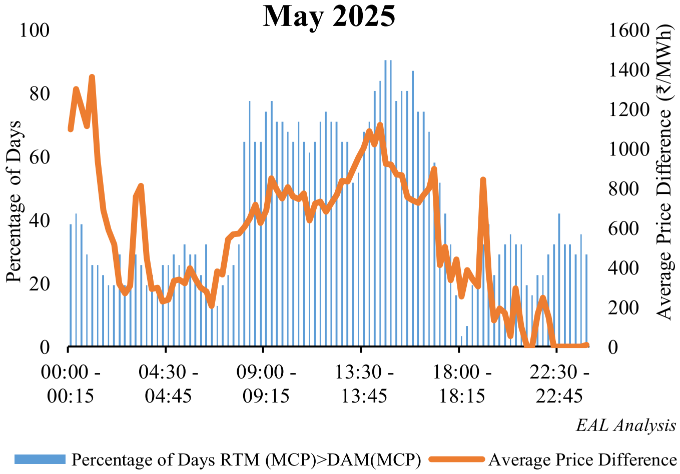


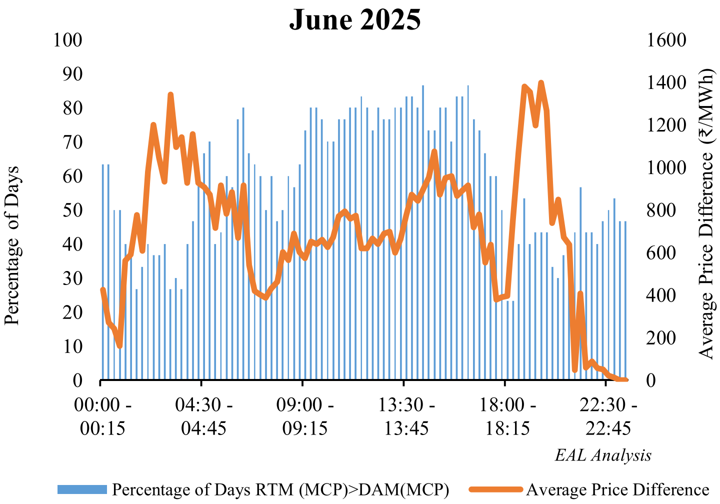
Price Difference between RTM & DAM

April 2025



May 2025

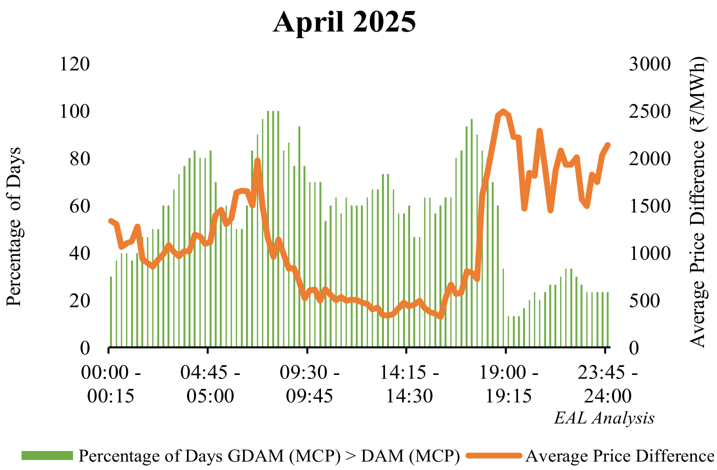


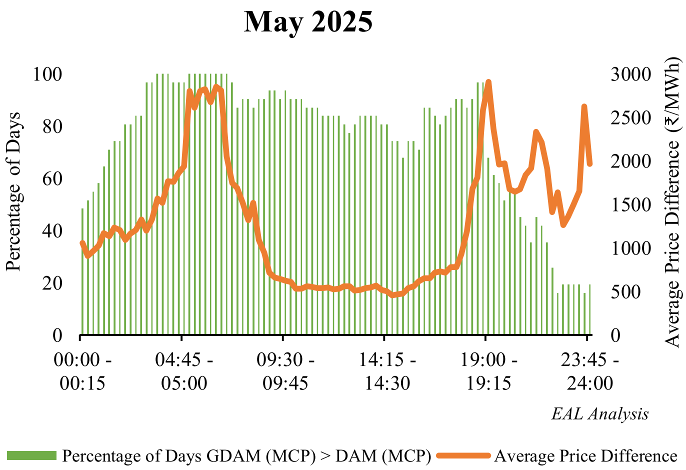


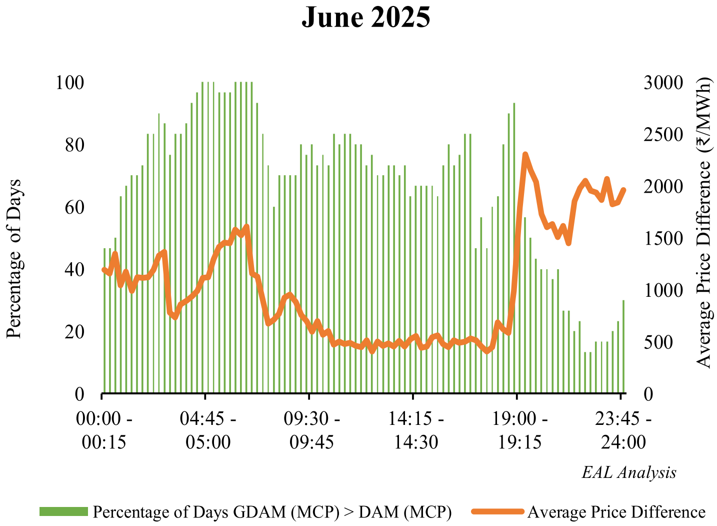
EAL Analysis

- 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 first 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 18:00-18:15 block the highest average price difference is observed of RS. 3.4/ kWh for the month of April, 2025.
- The average price difference between RTM and DAM is Rs. 0.67/ kWh for the quarter.

Price Difference b/w GDAM vs DAM







EAL Analysis

- The analysis is based on comparison between the average price difference of G-DAM and DAM, when MCP of G-DAM is greater than DAM for the first 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 19:00-19:15 block the highest average price difference is observed of Rs. 2.90/ kWh for the month of May, 2025.
- The average price difference between G-DAM and DAM is observed to be Rs. 1.29/ kWh for the quarter.

Opinion on CERC Notification on (Public Comments on petition No. 277/MP/2024 filed by Indian Energy Exchanges Ltd.) 2025

Cite

The Central Electricity Regulatory Commission (CERC) notifed on "Public Comments on petition No. 277/MP/2024 filed by Indian Energy Exchanges Ltd." on 7th April 2025.The key objective of the document is mentioned below:

Objective: The IEX seeks to introduce the Green Real-Time Market (G-RTM) to facilitate renewable energy (RE) trading by providing a platform for real-time transactions, in order to address the variability and forecasting challenges of RE generation through shorter trading windows. The G-RTM aims to enhance market efficiency and flexibility by allowing RE generators to manage forecasting errors, reduce deviations, and ensure grid stability, with the option to transfer unselected bids to the conventional Real- Time Market (RTM). It supports the Government of India's goal of achieving 500 GW of RE capacity by 2030 and aligns with the National Electricity Plan (NEP) 2023 by promoting market-based RE integration. It also attached procedural changes necessary for approval on G-RTM's operational framework, including contract specifications and amendments to IEX's Business Rules, it will enable seamless implementation. Additionally, it addresses stakeholder demands, evidenced by the unmet 72% of RE purchase bids in the Green Day-Ahead Market (G-DAM) in FY24, and seeks to create new trading avenues for RE generators, including merchant projects, while helping obligated entities meet their Renewable Purchase Obligations (RPOs).

EAL Opinion

- **G-RTM to Help Reduce Deviations under DSM:** Variability and uncertainty associated with renewable energy sources is reflected in the revision of RE schedule from day-ahead till the gate closure. Given such uncertainty, opportunity to buy/sell RE energy near to the time of delivery would provide an opportunity to the generators as well as buyers to adjust their buy/sell portfolio on account of changes in the RE generation forecast.

  G-RTM is a long-awaited product to address the gap in the spectrum of RE based electricity contracts for trading on power exchanges. **This void was currently been made up through the Deviation Settlement Mechanism (DSM). G-RTM should thus help reduce exchange of energy under the DSM, thus improving grid stability under growing RE share**.

- **Tightening of DSM Framework for RE:** With introduction of a near term green electricity-based product, the CERC would have the opportunity to tighten the DSM regulation in general, more specifically for the conventional as well as RE generators. This should be done to reduce deadband for zero penalty for RE generators and passing on greater cost impact to RE generators. With the availability of G-RTM, the penalty for RE generators may be brought closure to the one applicable for the other generators i.e. more in line with the market prices.

- **Loss of Green Attributes and Role of REC-based RPO:** In the absence of the G-RTM product, part of the excess RE generation resulting as an outcome of the **upward schedule of RE generators was being sold as under the RTM resulting in loss of green attributes associated with the RE based electricity.** G-RTM would address this partially. Similarly, a reduction in RE schedule, leading to shortfall in RE procurement for fulfilling the RPO, could not be made from energy purchase under the RTM.

  However, unclear RE energy from the G-RTM would now be sold through the RTM, thus resulting in loss of their green attributes. A recent Regulatory Conclave on Energy Transition and Framework for RPO organized by CER, IIT Kanpur, suggested a **mechanism for REC-based RPO compliance to ensure that all RE transacted across the country is accounted for, avoiding any leakage or double counting of the green attributes.**

Suggested Citation: Singh, A. (ed.). (2025), Opinion on (CERC Notification on (Public Comments on petition No. 277/MP/2024 filed by Indian Energy Exchanges Ltd.),Power Chronical (Vol. 08, Issue 01, pp. 7), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

Opinion on Grid-India Suggestions on Increasing the Frequency of REC Auction Sessions at Power Exchanges, 2025

Cite

Grid India notified on "Increasing the Frequency of REC Auction Sessions at Power Exchanges" on 8th April, 2025. The key objective of the document is mentioned below:

Objective: The PXIL file Petition for proposed new REC trading mechanisms Reverse Auction, Forward Auction, and Continuous Matching to improve flexibility, liquidity, and price discovery. The aim was to support obligated entities in meeting RPOs and enhance REC market efficiency. CERC rejected the proposals due to concerns over market fragmentation and manipulation. However, it directed Grid-India to assess the feasibility of increasing REC auction frequency.

EAL Opinion

- **Avoiding Continuous Matching to Preserve Market Competitiveness:** In the proposed Clauses 4(vii) *"Continuous matching Contract: In this Contract, the principle of 'price-time priority' is applicable as prevalent in existing Day Ahead and Intra Day Contingency Contracts operating under provisions of Regulation 5(2) of CERC (Power Market) Regulations, 2021. Buyers and Sellers will submit their bids to meet their transacting requirements. The Exchange will issue a calendar for conducting continuous auction sessions for ease of participation."*

  Experience from the Term-Ahead Market (TAM) points towards certain malpractices in the price discovery mechanism. Price matching resulting from simultaneous entry of buy and sell bids based on 'agreed' price does not hold sanctity of ethical market practices. While this process may appear to facilitate price discovery through competition, the actual level of competition is significantly undermined. It is therefore, recommended that **continuous matching contracts be avoided**, as they open avenues for market manipulation and, erode the confidence of both the market participants and the regulators alike.

- **Choosing Amongst Reverse vs Forward vs Continuous Auction:** Additional trading sessions for the existing uniform pricing mechanism would be the first choice to enhance trading of the Renewable Energy Certificates (RECs). Amongst the proposed options for new auction types**, we suggest adoption of only Reverse Auction at this stage of development of the REC market**. Given the limited liquidity for the REC market under the prevailing conditions, **multiplicity of auction** types would further segment the liquidity and reduce competition in the market. As suggested above, **continuous auction approach should not be adopted**.

  The forward auction approach may not provide expected results, as this may convert the market to a sellers' market with limited or no benefit of competition. **As a general procurement principle, the government owned entities would generally withhold themselves from participation in such a mechanism as this will go against the principle of the lowest bid**. The reverse auction mechanism should undergo a performance review after six months to evaluate its effectiveness, participation levels, and impact on REC pricing and market liquidity.

- **Align Reverse Auction with REC Trading Calendar**: REC trading currently occurs on each month's second and last Wednesday. It is proposed that the first and third Wednesdays be used for reverse auction bidding. This would not only provide continuity for the trading sessions across the month, but also provide pricing signals across sessions including those for the reserve price for reverse auction. The effectiveness of this arrangement on trading activity ad outcome thereof should be reviewed after six months (Refer Figure 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.

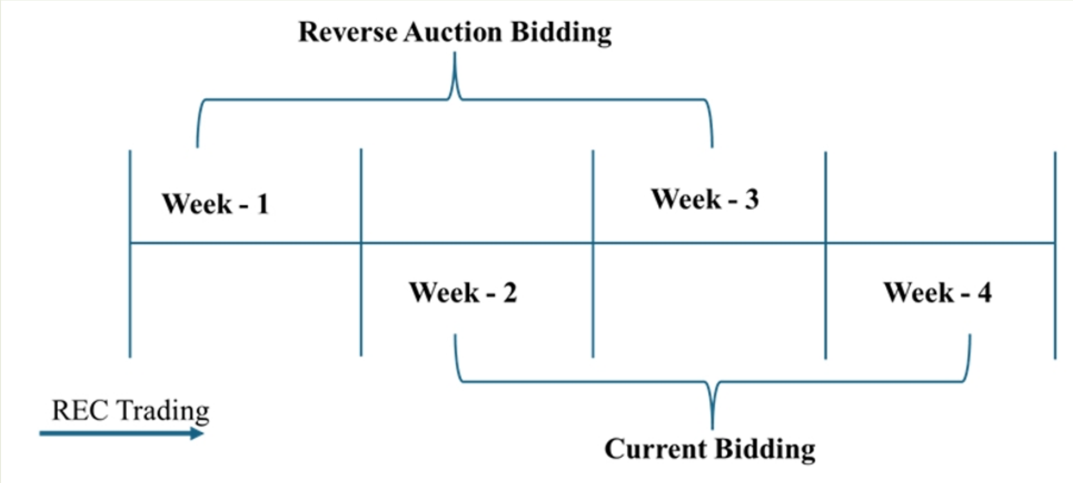


Figure 1. Proposed Timeline for everse Auction Bidding

- **Reverse Auction Framework: Timing, Implementation, and Contract Sequencing:** In the proposd Clause 4 (v) *"Reverse Auction Contract: In this contract, the Discoms and the obligated entities, who would want to buy RECs, can have exclusive one-sided auction sessions initiated by the buyer for the purchase of RECs, wherein multiple sellers would submit offers for the sale of RECs, upto the quantum requisitioned by buyer. The buyer would specify its requirement in terms of the quantum (nos.) of REC to be purchased. Sellers will submit their offers providing quantum (nos.) and Price in Rs. / Certificate against the requisition made by Buyer in the auction window. The auction process shall be undertaken as two (2) stage processes, i.e., the Initial Price Offer (IPO) stage and Reverse Auction."*

Reverse Auction mechanism holds significant potential to enhance competition, improve price discovery, and drive efficiency in the REC market. However, success of this mechanism hinges on robust contract design, clear operational procedure, and transparent bidding framework.

Under the reverse auction framework, buyers specify a reserve price, and sellers compete by bidding below that reserve price. Such reverse auctions are already adopted for the procurement of renewable energy as well as storage services offering benefits of competition. This design would stimulate price efficiency and generate meaningful competition in the market. An approach similar to that followed for the established reverse auction for RE procurement (e.g., 1), may be adopted to balance flexibility with fairness, while ensuring transparency and efficiency in the reverse auction process.

The following design considerations should be adopted to ensure competition and transparency of the reverse auction process

(i) Advance Disclosure of Reserve Price Bids: To ensure that reverse auction mechanism provides sufficient and advance information to the potential buyers, reserve buy bids should be submitted and publicly disclosed at PX website at least a day in advance. This would provide sufficient time for the sellers to work out their bidding strategy and dissuade unfair market practices.

(ii) Simultaneity of Reverse Auction Contracts: In case multiple buyers wish to submit a buy bid for exclusive reverse bid auction with same or different reserve prices for the same trading session, the proposal does not provide any clarity about the process to be followed. While all contracts of same reserve price can be clubbed together for reverse auction, a separate mechanism would be required in the case of multiple reserve price (see below).

(iii) Minimum Criteria for Participation/Market Clearing: In case of a reverse auction, following conditions may be introduced,

- Minimum of three bidders to participate in a reverse auction
- Each seller to bid for a minimum quantum sought to be purchased by the buyer

(iv) Culmination of Bidding: The reserve auction should have clear criteria for culmination of the bidding, while ensuring that the process is transparent and not amenable to manipulation. This may include, total duration of the auction, minimum price gap between the competing bids, time gap between the competing bids during the penultimate round of auction, extension of bid duration in case of x% improvement in the bid during the penultimate round of auction etc.

- **Exclusive Multiple Reverse Auctions per Trading Session?:** The proposal seems to suggest that each of the reverse auction for a single trading session would be dealt with exclusively. Such exclusivity mechanism raises multiple additional issues. For e.g. Will multiple reverse auctions bringing with same/different reserve price be held concurrently in a trading session? Some of the solutions are suggested below.

  (i) Combine Reserve Auction for Contracts with Same Reserve Price: There is no justification for exclusive sessions for reverse auction contracts with same reserve price. Contracts with identical reserve price for the same trading session can be combined into a single auction to streamline the process and encourage competition. Final cleared quantum to be allocated on pro-rata basis if cleared quantum is less than the total buy bids.

  (ii) Sequencing of Multiple Contracts with Differing Reserve Pricing: In case of differing reserve prices quoted for the same trading session, a criteria for sequencing of such auctions would be required. One of the options would be to sequence such buy bids beginning with the one with highest reserve price and so on. This would be economically efficient as this would give correct economic signals for the reserve price. However, it would be challenging to organize such sequential exclusive sessions for possibly hundreds of reverse auction in a single trading session.

  (iii) Aggregation in Case of Multiple Buy Bids: Another option, in case of multiple buyers seek RECs through Reverse Auction for the same trading window, would be to aggregate their demand for a unified reverse bidding session. Thus, no exclusively to be offered in that case. Those bidding against this aggregated demand curve could be selected based on bucket filling approach.

- **Bucket Filling:** Will the proposed design for reverse auction provide for a bucket filling approach, which would allow for 'clearing' of the lowest few bids (up to a bid increment margin) to ensure that the minimum required buy quantum is mopped up (see figure below). Once the lowest bid fill part of the quantity, the next-lowest bid is considered, and so on, until the total required y is fulfilled. This would be akin to the process of reverse bidding followed for RE projects.

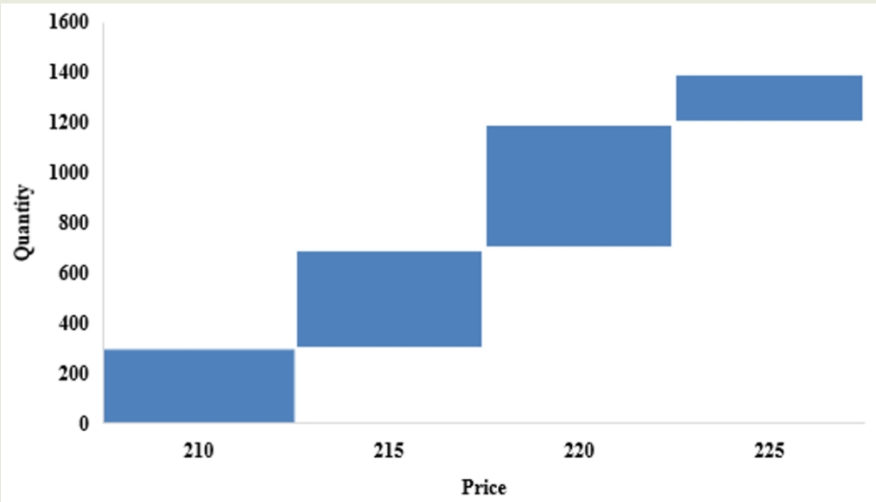


Figure 2. Bucket Filling Approach

Buyer Demand: 1000 RECs
Bidder A: 300 RECs @ Rs. 210
Bidder B: 400 RECs @ Rs. 215
Bidder C: 500 RECs @ Rs. 220
Bidder D: 200 RECs @ Rs. 225

Filling order:
Step 1: Take 300 RECs from A @ Rs. 210 → **Remaining demand: 700**
Step 2: Take 400 RECs from B @ Rs. 215 → Remaining demand: 300
Step 3: Take 300 RECs from C @ Rs. 220 → Remaining demand: 0
Bidder D is not cleared.

https://www.seci.co.in/web-data/docs/Proccedure%20for%20e-Tendering%20and%20e-RA.pdf

Market Monitoring and Potential for Market Manipulation: In the case of low liquidity, market outcome can be manipulated by the participants. To avoid this, the auction design should provide for procedural transparency and information disclosure regarding the upcoming reverse auction. Market monitoring studies should periodically investigate the bidding behaviour of participants and its impact on the market outcome. Detailed data about bidding as well as market outcome should be published. This may include (but not limited to)

- Reserve price and quantum of buy bid with time of submission
- Bid price, bid volume and bid timings for each of the sale bid, and cleared volume for each of the reverse auction bid be published separately.

Opinion on CERC (Guidelines for Virtual Power Purchase Agreements) Regulations, 2025 [Draft]

Cite

The CERC notified draft on "Virtual Power Purchase Agreements Guidelines", 2025 issued on 22nd May, 2025. The key objective of the document is mentioned below:

Objective: The Draft Guidelines for Virtual Power Purchase Agreements (VPPAs), issued by the Central Electricity Regulatory Commission (CERC) in 2025, aim to establish a formal regulatory framework to facilitate financial contracts for renewable energy procurement without physical delivery. These guidelines recognize VPPAs as Non-Transferable Specific Delivery (NTSD) over the counter (OTC) contracts between renewable energy generators and consumers (including designated consumers), enabling large commercial and industrial buyers to meet their Renewable Consumption Obligations (RCO) through the purchase of RECs linked to these agreements. The strike price is mutually agreed upon by parties and settled financially against the market price (typically on power exchanges), with the difference paid or received by the consumer. Key highlights include clear recognition of VPPAs under CERC's regulatory oversight (subject to SEBI's jurisdictional clarity), mandatory REC transfer (non-tradable) to buyers for RCO compliance, and a standardized contract structure with defined settlement and dispute resolution mechanisms. The guidelines also propose integration with emerging OTC platforms and mark a step toward market-based decarbonization, providing legal certainty and scalability for corporate renewable procurement in India.

EAL Opinion

Relevance of Virtual PPAs: VPPAs would help unlock further investment in the renewable energy development, wherein a buying entity need not take direct delivery of the electrical energy, which is separately sold in the market. This offers greater revenue certainty to the investors as the price associated with the RECs as well as the energy can be directly contracted/negotiated between the RE generator and the buyer entity. This would also help enhance RPO compliance for open access and captive consumers.

Enabling Tradability of Surplus RECs: In the proposed Clause (5.2) *"Under this arrangement, if the RE generator sells electricity components through power exchanges (in DAM and/or RTM market segments) or any other mode authorized under the Electricity Act 2003, the Renewable Energy Certificates (RECs) received thereby shall be transferred to the Consumer or Designated Consumer who can use such RECs for RCO compliance or for claiming green attributes. Such RECs shall not be allowed to be traded."*

RECs under VPPAs are transferrable to the consume but are not allowed to be traded, in line with the NTSD nature of such contracts. However, since RPO compliance rollover is generally not permitted under current regulations, any surplus RECs resulting from under-forecasting or over-procurement may remain unutilized. Allowing the trade of such verified surplus RECs would enhance compliance flexibility, prevent wastage, and support overall RPO achievement. This approach also aligns with the intent of the REC framework to promote an efficient and fungible

Suggested Citation: Singh, A. (ed.). (2025), Opinion on CERC (Guidelines for Virtual Power Purchase Agreements), 2025 [Draft], Power Chronicle (Vol. 08, Issue 01, pp.11-12), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur.
https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

green certificate market. Moreover, as the market evolves, if RECs are replaced or supplemented by other instruments such as Carbon Certificate, I-RECs (International Renewable Energy Certificates) or similar green attribute products, the same flexibility should be extended to ensure these certificates can be optimally used or traded. **A well-regulated provision enabling the trade of surplus green attributes whether RECs, I-RECs, or future equivalents would strengthen market efficiency and RPO compliance without undermining the integrity of VPPA contracts.**

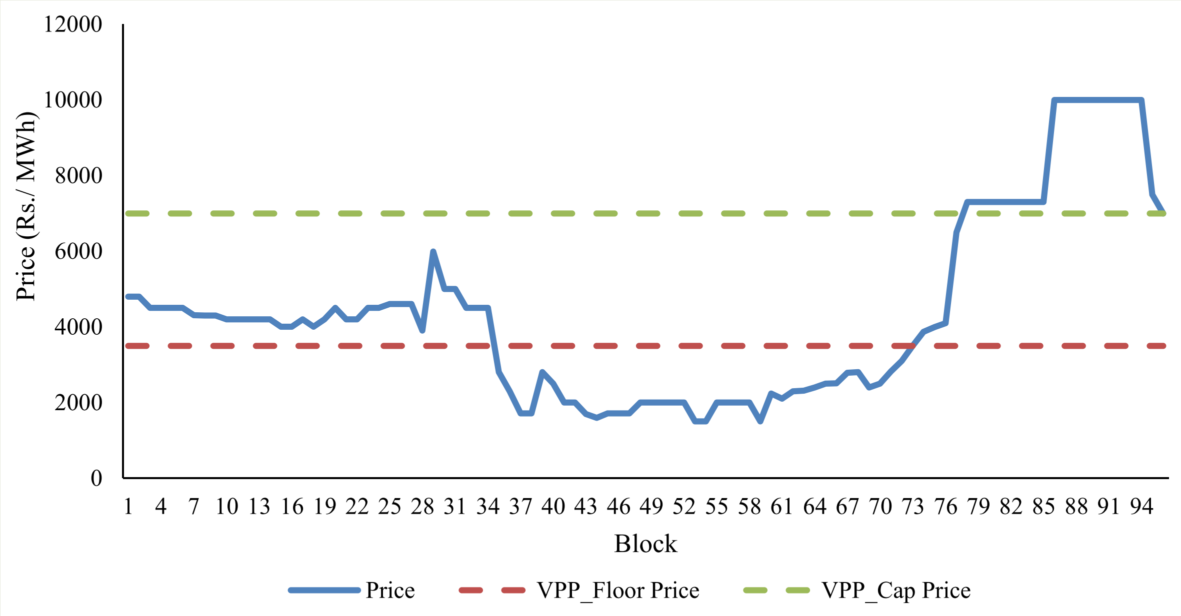


Figure 3. Pricing Mechanism

- **Risk Management Tools and Role of Derivatives:** In the proposed Clause (5.2) The generator as well as the buyers may consider hedging mechanisms, including financial derivatives, to manage risks associated with their exposure to market price fluctuations. Such instruments can provide additional price certainty beyond the VPP structure, particularly in volatile market conditions. With the emergence of the market of derivatives for electricity, the generator and buyers would now have access to such avenues. Improved liquidity may also open scope for a derivatives market for RECs in future.

Opinion on HPERC (Deviation Settlement Mechanism and Related Matters) (Second Amendment) Regulations, 2025

Cite

The HPERC notified "Deviation Settlement Mechanism and Related Matters (Second Amendment)" on 26th April, 2025. The Key objectives of document is mentioned below:

Objective: The amendment to the Principal Regulation substitutes the definitions of Contract Rate and Reference Charge Rate under Regulation 2, updates the key design parameters by aligning them with the CERC (Deviation Settlement Mechanism and Related Matters) Regulations, 2024, and revises Charges for Deviation under Regulation 7 for general seller, RoR generating station, and Buyer, incorporating slabs linked to system frequency, band, declared generation schedule, declared buyer schedule, and volume limits, to promote grid security, commercial discipline, and responsible scheduling.

Suggested Citation: Singh, A. (ed.). (2025), Opinion on HPERC (Deviation Settlement Mechanism and Related Matters) (Second Amendment) Regulations, 2025 [Draft], Power Chronicle (Vol. 08, Issue 01, pp.12-15), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

EAL Opinion

- **Contract Rate:** In the proposed Clause K(ii) "*in respect of a WS seller or a MSW Seller or such other entity as applicable, whose tariff is not determined or adopted or approved under Section 62 or Section 63 or Section 86(1)(b) of the Act, and selling power through power exchange(s), the price as discovered in the Power Exchange for the respective transaction*;"

  A merchant generator may sell electricity through multiple power exchanges as well as through multiple contracts, as well as through traders. Would the price discovered for the 'respective' trade at which a merchant generator sells electricity through power exchanges for the 'respective transaction' be considered? The above clause should be modified to account for weighted average price across all the products across all the power exchanges. Since discovered prices vary across the exchanges, for the same time block, would weighted average price across exchanges be used ?

  As highlighted in our previous inputs to above CERC [1], value of electricity varies across time blocks of the day. With significant difference between the electricity price across time blocks (for example, across the solar and the non-solar hours), use of average market prices significantly distorts the market signal.

  A merchant generator may sell all of its capacity under short-term contract through traders, or other bilateral arrangements (for example directly to open access consumers). How would such information be collected and incorporated in the weighted average price?

- **Correction in the definition of Contract Rate (RR):** In the proposed Clause K(iv) *"in case of multiple contracts or transactions including captive consumption, the weighted average of the contract rates of all such contracts or transactions, as the case may be;"*

  It is suggested to the commission to consider the following definition "In case of multiple contracts or transactions & Multiple exchanges including captive consumption, the weighted average of the contract rates of all such contracts or transactions, as the case may be;"

  It is recommended to add this word "Multiple exchanges" for better clarification. the suggested change would more accurately reflect the practical scenarios where entities participate across different power exchanges.

- **Settling Multiple Contracts through a Single Meter:** The evolving nature of the power sector across states is witnessing sale of power through multiple contracts through a common metering. Energy accounting and settlement thereof have significant commercial implications including those on account of the applicable deviation settlement mechanism, especially when part of the contracts are of inter-state nature while the rest are for intra-state nature. Different rates and limits for DSM across the intra-state and inter-state transactions offer arbitrage opportunity. This was also highlighted in our previous inputs to TNERC[2].

  Although the Indian power grid operates as a synchronized system, deviation charges levied by the Central Electricity Regulatory Commission (CERC) and Himachal Pradesh Electricity Regulatory Commissions (HPERC) differ (as proposed in the draft regulations). Figures below highlight this difference. In general, DSM charges for over-injection (under-drawal) are higher (lower) for inter-state deviation vis a vis those proposed in the draft amendment. CERC's deviation charges tend to be higher for under-injection because deviations at the inter-state level have a wider impact on overall grid frequency stability and require costly ancillary services to restore balance.

  Similarly, an open access/captive consumer drawing electricity against that scheduled at inter-/intra-state level from the same meter would also face such arbitrage. The regulations should provide for 'appropriation' of deviation across the inter-state and intra-state transaction.

[1] Singh, A. (ed.). (2024), Opinion on CERC (Deviation Settlement Related Matters), 2024[Draft], Power Chronicle (Vol. 07 Issue 01, pp.8-9), Energy Analytics Lab (EAL), Indian Institute of Tehnology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_7 issue 1. pdf

[2] Singh, A. (ed). (2021), Opinion on TNERC (Grid connectivity and Intra-State Open Access) 2021 [Draft], Indian Institute of Technology Kanpur. https://cer.iitk.ac.in/newsletters/regulatory_insights/Volume03_Issue03.pdf

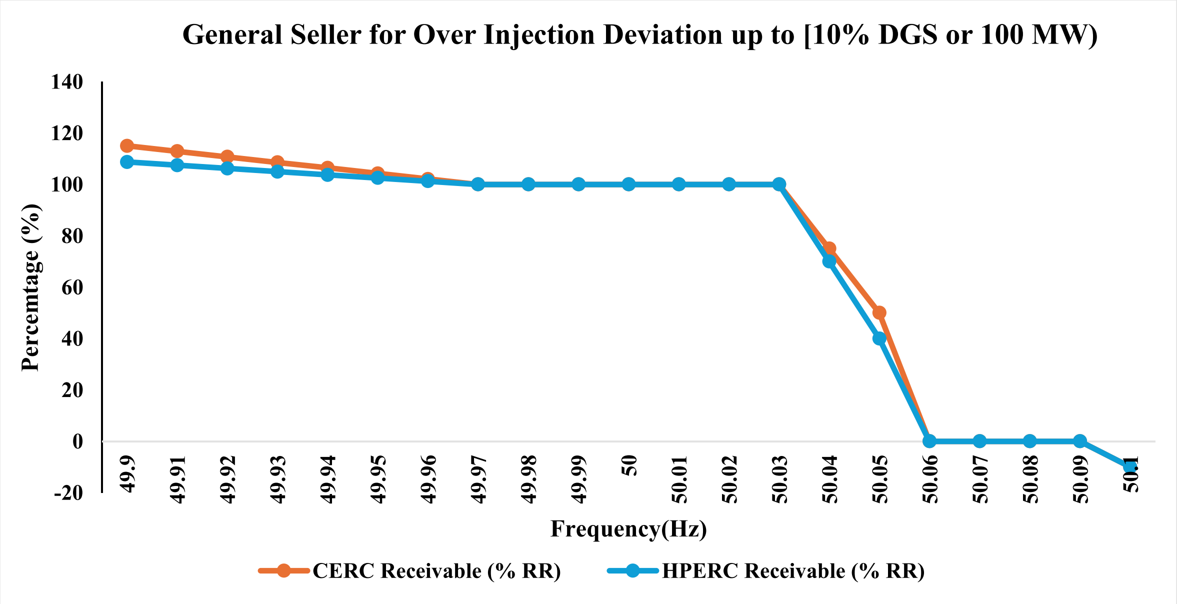


Figure 4: General Seller for Over Injection Deviation CERC & HPERC

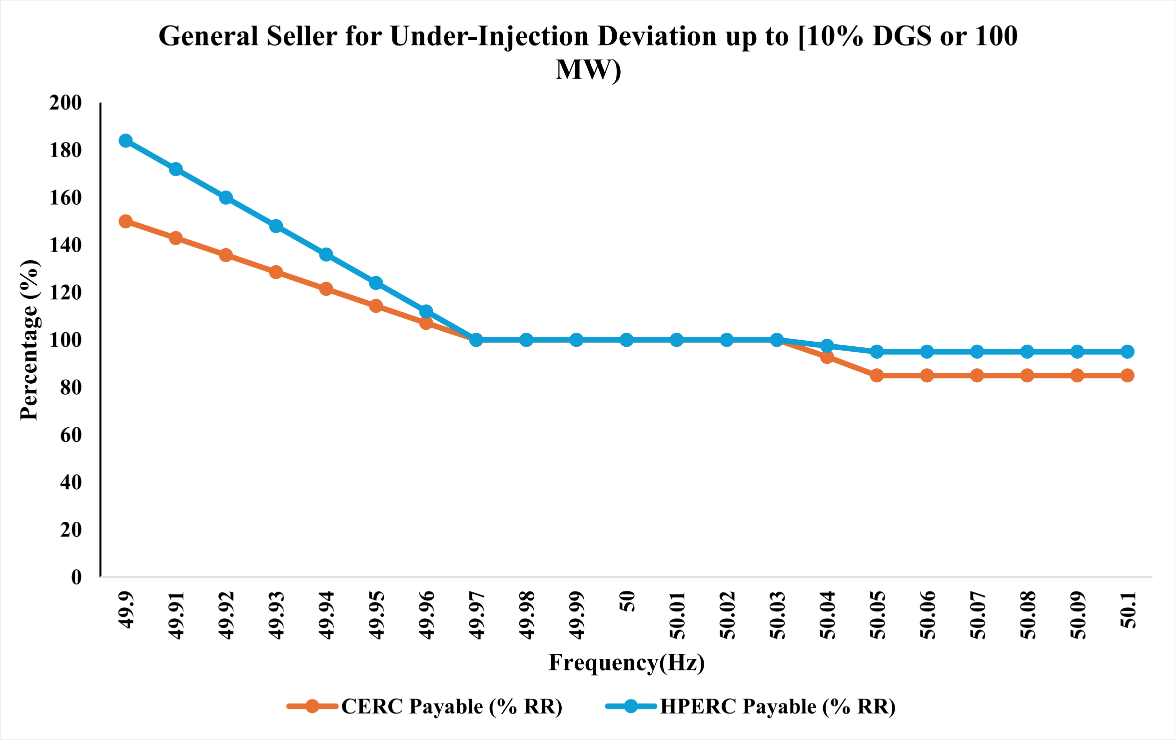


Figure 5: General Seller for Under-Injection Deviation of CERC & HPERC

HPERC DSM Proposal for Buyer: The HPERC DSM proposal should adopt a phased alignment with CERC's DSM framework over 2-3 years to ensure smooth transition and national consistency. Under-drawl incentives above 50.09 Hz should be removed to prevent grid instability, while over-drawl penalties during high-frequency periods (above 50 Hz) should be aligned with that under CERC's framework. Similarly, significant higher under-drawal DSM penalty, in certain cases nearly 100% higher than that under the CERC framework (See Figure 6), presents significantly higher deviation arbitrage.

No buyer under-drawal penalty above 50 Hz (Figure 7) also does not hove well for the grid discipline as there is no counterbalancing incentive to stabilise the grid if frequency overshoots 50 Hz.

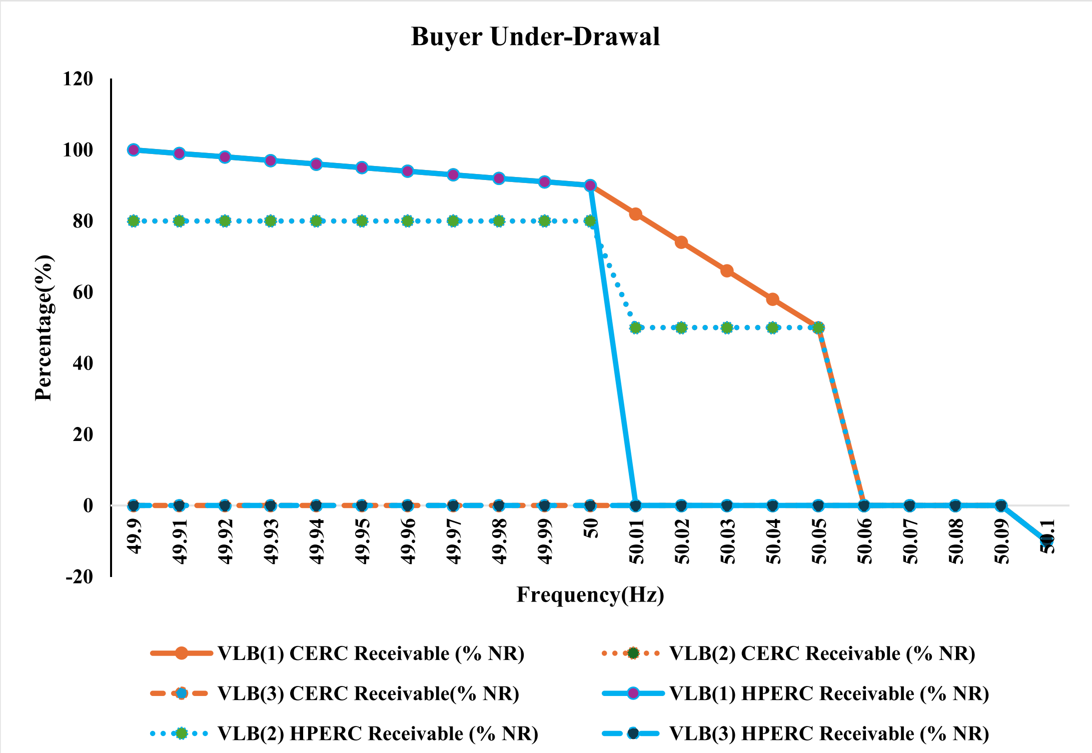


Figure 6: Buyer for Over-Drawl Deviation of CERC & HPERC

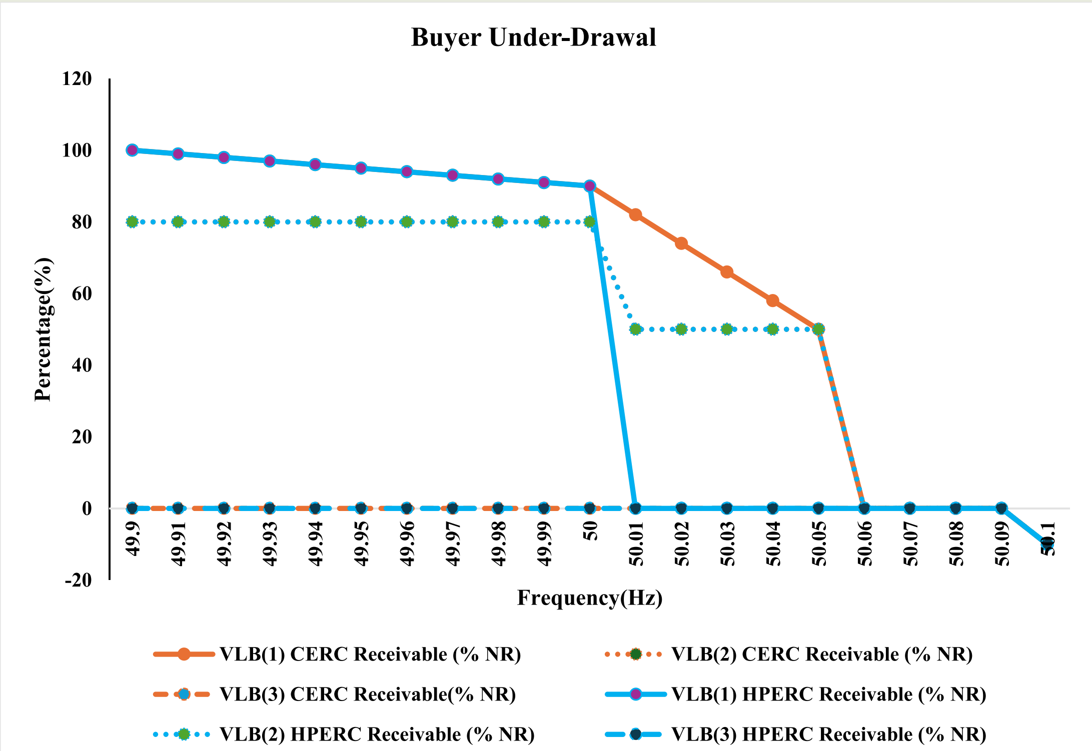


Figure 7: Buyer for Under-Drawl Deviation of CERC & HPERC

Finally, enhancing transparency through real-time monitoring dashboards and regular deviation reports will improve accountability and effectiveness. Overall, gradual convergence with inter-state regulations will obviate arbitrage opportunity while still strengthening grid discipline.

Opinion on (Amendments Proposed in Model Bidding Documents for Long Term Procurement of Electricity from Thermal Power Stations set up on DBFOO Basis) Regulations, 2025 [Draft]

Cite

The MoP notified "Draft amendments proposed in the Model Bidding Documents for Procurement of Power for Long Term from Thermal Power Stations set up on Design, Build, Finance, Own and Operate (DBFOO) Basis -Regulations", issued on 15th April, 2025. The Key objectives of the document is mentioned below:

Objective: The draft documents proposed amendment on "Model Bidding Documents (MBDS) 2.0" to the existing model framework for the long-term procurement of electricity by distribution licensees from thermal power stations operating on a Design, Build, Finance, Own, and Operate (DBFOO) basis. These changes aim to update clauses in the bidding and power supply agreements to reflect evolving policy, regulatory needs, financial structures, and risk-sharing mechanisms. The intent is to enhance clarity, ensure fairness in bidding, and align with current legal and economic conditions in India's power sector.

EAL Opinion

- ***Incentive for Higher Availability as well as Higher Ramp Rate:*** In the proposed Clause 21.4.4 *"The obligations of the Utility to pay Fixed Charges in any Accounting Year shall in no case exceed an amount equal to the Fixed Charge due and payable for and in respect of the Normative Availability of 90% (ninety per cent) computed with reference to the entitlement of the Utility in Contracted Capacity (the "Capacity Charge"). Provided, however, that in the event of Despatch of the Power Station beyond such [72% (seventy two per cent)], Incentive shall be payable in accordance with the provisions of Clause 21.6.1. For the avoidance of doubt, the Capacity Charge referred to herein shall be equal to and computed with reference to the* ***maximum*** *Availability of [72% (seventy two per cent)] of the Contracted Capacity."*

  PLF of a power plant is dependent on plant schedule provided by the beneficiaries and, hence, is outside the control of the generator. In contrast, availability is very much within the control of the generator and hence should be the benchmark for incentive instead of PLF. It is highlighted that CERC had dropped the incentive benchmark from PLF in favour of availability.

  With rising share of RE, higher availability of thermal generation is more valuable during low RE hours/seasons. With significant technological progress and efficient operational practices, new plants are able to demonstrate significantly higher availability. Availability level for incentive should be set at a minimum of 90%. Incentive calculation should be based on a minimum level of availability across identified block of hours of the day (say, peak/off-peak or solar/non-solar hours) for a month rather than averaged availability across the month. This would also ensure that there is no incentive to game a system, especially by plants with 'open capacity' (see comment below).

  With increasing share of RE, higher ramp rate bears an important significance. In line with CERC Terms and Conditions for Tariff, the guidelines should also incorporate incentive for higher ramp rate, beyond the 3% per minute. However, care should be taken in design of the framework for measuring the ramp rate and calculation of incentive thereof. Our earlier inputs on the methodology for calculation of ramp rate and incentive thereof pointed towards anomalies that may water down the ramp rate[4].

- **Availability Declaration for Contracted Vs Installed Capacity:** In the Provision for Open Capacity should be supplemented with a safeguard against differentiated availability across the contracted and the open capacity else

Suggested Citation: Singh, A. (ed.). (2025), Opinion on (Amendments proposed in Model Bidding Documents for Long Term Procurement of Electricity from Thermal Power Stations set up on Design, Build, Finance, Own and Operate DBFOO Basis) [Draft], Power Chronicle (Vol. 08, Issue 01, pp.16-17), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur.
https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

this may lead to potential gaming vis a vis declaration of plant availability for the contracted capacity. The normative availability of 85% for full recovery of fixed charges can be demonstrated even with lower availability during the valuable peak hours (say, about 3.5 hour per day). High electricity prices (sometimes even hitting the market cap) in the market are generally witnessed for a period of 4-6 hours each day, there is ample opportunity to under declare capacity during peak hours while making up the same during off peak/other hours when market prices are low. This would ensure greater 'open capacity' available at disposal of the generator for sale into the market during periods of higher prices. While the cited example points to an extreme case, 'absence' of a safeguard in the Guidelines leaves the door for opportunistic gaming.

The guidelines may include a condition that **the declared capacity for the contracted capacity should be proportionate to the availability of the plant as a whole i.e. availability across 'contracted capacity' and 'open capacity' cannot be differentiated.**

- **Reduced Duration of Ramp up from cold start to full capacity:** In the proposed document the Schedule B (4 and 5) states that *"All Units of the Power Station shall be capable of increasing or decreasing their output (generation level) by not less than 3% (three per cent) per minute. Such capability shall at all times be demonstrated during the Unit load of 50% (fifty per cent) or more. Each Unit of the Power Station shall have the capacity to ramp up from a cold start and reach full capacity within a period of 8 (eight) hours from the time of each start"*.

With increasing renewable energy (RE) penetration in the power system, thermal power plants (TPPs) are required to provide flexibility services. Schedule B Clause 4 mandates a minimum ramp rate of 3% per minute above their technical minimum. However, Schedule B Clause 5 states that the plant will reach full capacity within 8 hours. Since higher ramping rate of 3% per minute is mandated for operations above technical minimum, duration for ramp from cold start need to be benchmarked at lower value as explained below.

With the enhanced ramp rate of 3% per minute above technical minimum, and the plant's ability to achieve at least an 'average' ramp rate of ramp rate, the duration of time to achieve full capacity should at least be reduced to 7 hour and 30 minutes (See Figure below). This assumes that the plant with enhanced ramp rate of 3% pe min does not have any influence on the ramp rate up to the technical minimum level. Whereas, there would be an impact and hence the plant should be able to achieve full capacity output **in less than 7 hours and thirty minutes (plotted as dashed line in the figure). Central Electricity Authority (CEA) may be mandated to benchmark startup and shutdown time from/to cold, warm and hot start status for thermal plants with higher ramping capability of 3% per minute.**

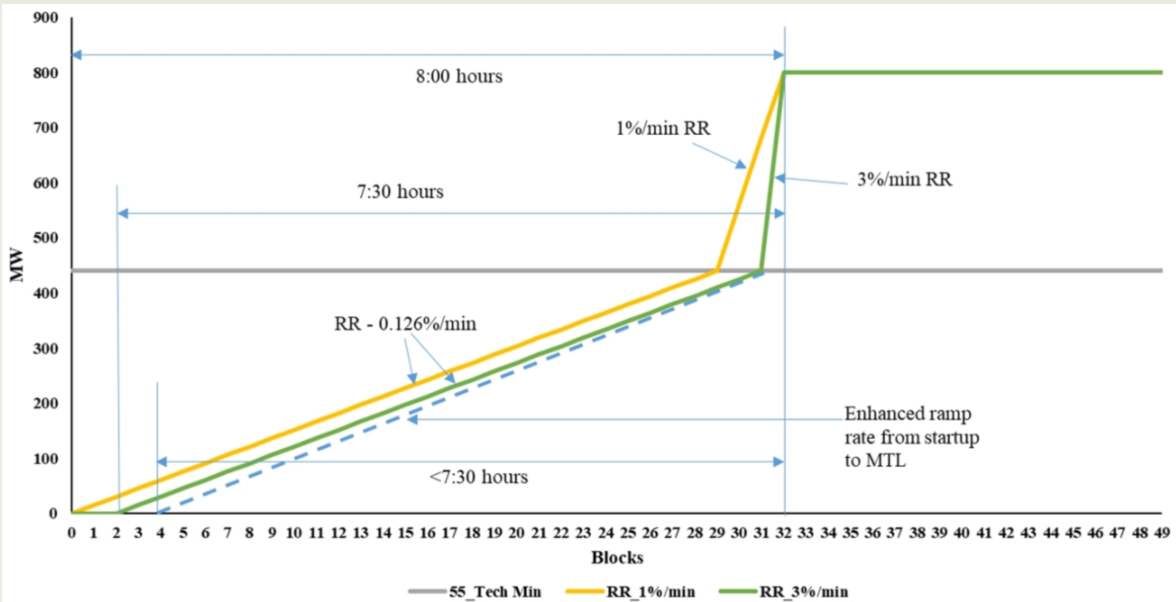


Figure 8: Thermal Power Plant Ramp Rate from Cold Start to Technical Minimum

[4] Singh A. (ed.). (2021), Opinion on POSOCO-NLDC Detailed Guidelines on Ramping Assessment, Regulatory Insights (Vol. 03, Issue 04, pp. 7), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://cer.iitk.ac.in/periodicals/regulatory_insights/Volume03_Issue04.pdf

- **Substantial Completion' of Plant:** In the Clause 14.1.1 *" For the avoidance of doubt, the Parties expressly agree that if the Power Station is substantially completed but COD is delayed for reasons attributable to the Utility, [15% (fifteen per cent)] of the Fixed Charge shall be due and payable hereunder as if COD has occurred for the Power Station or any Unit thereof, as the case may be, in addition to the extension of Concession Period under and in accordance with the provisions of this Agreement".*

  The clause states that "substantial completion" as a condition triggering partial payment obligations (15%) towards the Fixed Charge for a delay in COD attributable to the Utility. Such a provision should only be applicable if the plant is complete in all respects, excepts for those aspects whose completion is delayed due to causes exclusively attributable to the utility. Furthermore, the term 'substantial' need more specificity. For example, at minimum a substantially completed plant 'should include' completion of the Boiler, Turbine & Generator (BTG), chimney, pollution control equipment, fuel unloading bays, ash pond etc. **To avoid legal disputes as to the 'finality' of the 'substantial completion', the Central Electricity Authority (CEA) may be mandated to certify status of the plant based on ground realities supported with timelines for ordering of equipment and works and industry best practices regarding erection timelines etc**. Such partial fixed charge compensation (up to 15%) would be recoverable from the date of such certification by the CEA. The clause should also provide for an upper limit for duration of payment of such fixed charges.

Opinion on MoP (Amendments Proposed in Rule 18 (i.e., Energy Storage System) of Electricity Rules) 2005 [Draft]

Cite

The MoP notified draft on "amendments proposed in Rule 18 (i.e., Energy Storage System) of Electricity Rules", 2005 issued on 11th June 2025. The key objective of the document is mentioned below:

Objective: The proposed draft amendments aims to promote flexible deployment and integration of Energy Storage Systems (ESS) within the power sector. The amendment allows ESS to function independently or as part of generation, transmission, or distribution, and permits ownership and operation by utilities, consumers, system operators, or independent service providers. It clarifies the legal status of co-located and non-co-located ESS and introduces provisions for leasing or renting storage space. The proposed changes seek to enhance grid flexibility, support renewable integration, and encourage efficient, market-driven use of energy storage assets.

EAL Opinion

- **Group Energy Storage System:** In the proposed Clause 18(4)(a) *"The Energy Storage System can be developed, owned, leased or operated by a generating company or a transmission licensee or a distribution licensee or a consumer or a system operator or an independent energy storage service provider".*

  As the draft does not explicitly provide for an Energy Storage System (ESS) that may be set up by a group of consumers, thus limiting adoption of community-based storage models, which are particularly relevant for residential and small commercial consumers seeking to aggregate demand for cost-effective storage deployment. It is recommended that the rule should also provide for Group Energy Storage Systems (GESS) to be developed/operated by a group of consumers or an aggregator or an Energy Storage Service provider on their behalf, subject to appropriate regulatory oversight. GESS can play an important role in demand response.

- **Economics of ESS by Transmission Licensee/System Operator and Congestion Pricing:** For effective congestion management, ESS installations on **both generation and load sides** of a transmission corridor may be required. The following two scenarios may emerge.

  In the first case, if a transmission line at a specific time has Available Transfer Capability (ATC) of 100 MW, and the system requires a 120 MW transfer, **20 MW must be stored at the generation end (ESS – B) and**

Suggested Citation: Singh, A. (ed.). (2025), Opinion on (Amendments Proposed in Rule 18 (i.e., Energy Storage System) of Electricity Rules, 2005) [Draft], Power Chronicle (Vol. 08, Issue 01, pp. 18-21), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

simultaneously discharged at the load end (ESS - A) to ensure real-time energy balance, as illustrated in Figure 9 below:

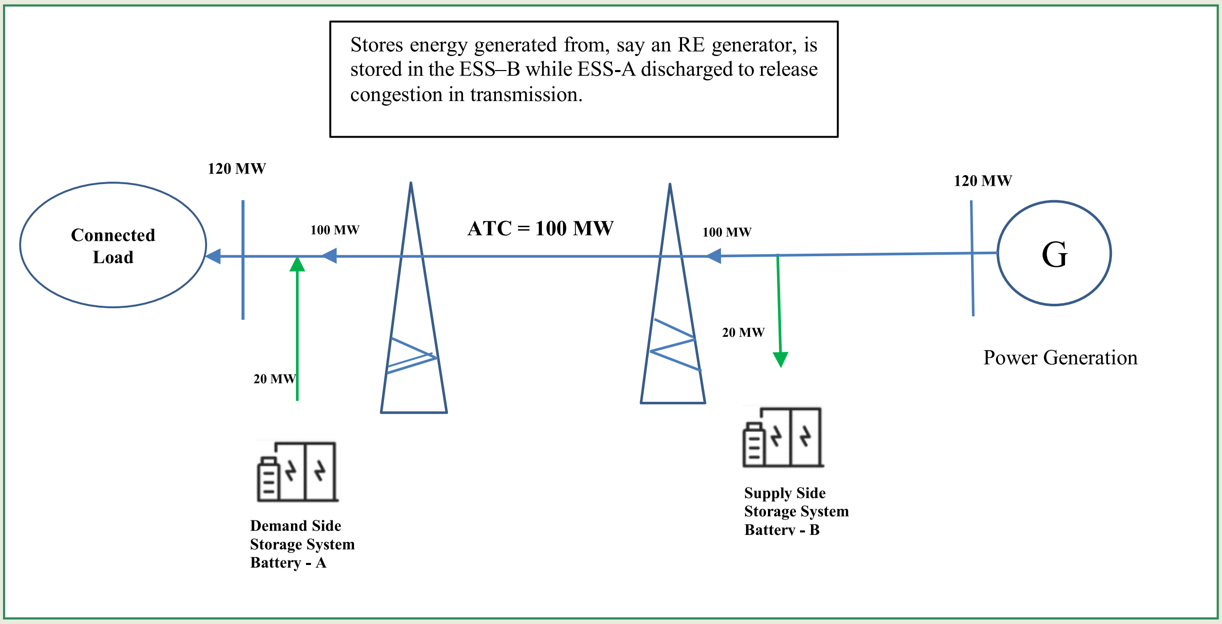


Figure 9: Operation of ESS During Congestion of Transmission Line

Conversely, in the second case when the scheduled supply and drawl across a transmission corridor is lower than its ATC for instance, if only 80 MW is scheduled against an ATC of 100 MW the unused 20 MW capacity can be efficiently utilized to facilitate energy transfer from the supply-side energy storage system to the demand-side storage system (B to A) to partially or fully restore the storage level for ESS-A. In such a scenario, the supply-side ESS (Battery B) discharges 20 MW of previously stored renewable energy, which is then transmitted through the available corridor capacity to charge the demand-side ESS (Battery - A), as shown in Figure 10. This not only optimizes the use of existing transmission infrastructure but also enables strategic charging of demand-side storage for future peak demand, thereby enhancing system flexibility and renewable integration without the need for immediate grid expansion.

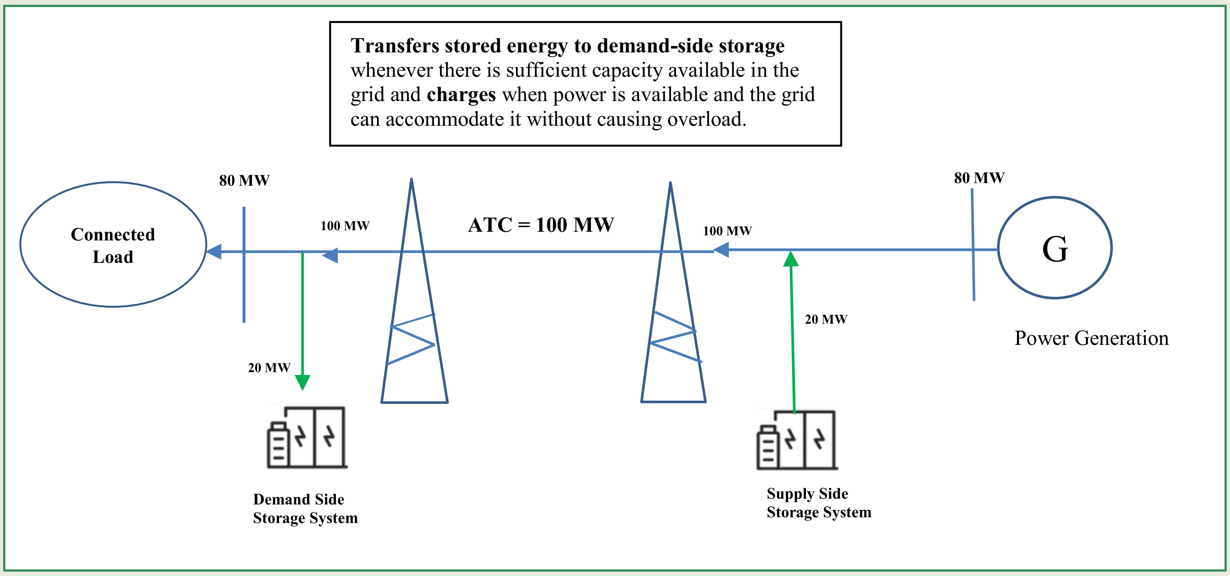


Figure 10: Operation of ESS when Scheduled Supply and Drawl is less than ATC

- **Energy Arbitrage by Transmission Licensees:** All the RPO compliance data, including that for the captive as well as open access consumers submitted through the RPO Web Portal should be archived and be publicly accessible in a machine-readable format. This would ensure transparency and effectiveness of the compliance framework As per the Section 41 of the Electricity Act, 2003, a transmission licensee is not permitted to engage in electricity trading. A transmission licensee, owning and operating an ESS would unintentionally end up engaging in energy arbitrage, if revenue realisation from discharge of ESS is higher than the cost of stored energy, adjusted for network losses and storage cycle efficiency. This would lead to accumulation of economic rents by the transmission licensee and would not be in line with the spirit of the Act.

  Since, strategic use of storage is meant to ease the transmission constraint and hence enable the system operator to ensure stability of the power system, the Energy Storage System (ESS) owned by the Transmission Licensee should be operated i.e. scheduled and despatched by the System Operator. This would also ensure that economic rents/costs attributed to the ESS owned by the Transmission Licensee are settled against the Deviation and Ancillary Service Pool Account. **Note that in case the ESS, especially BESS, are used to address deviations, 'scheduling and despatch' would not be applicable. Under such a situation the ESS would be treated as an ancillary service provider.**

  The modalities for power procurement for storage and discharge of stored energy in the ESS would be better managed by the system operator, who can also utilise the system imbalances to charge/discharge the ESS as per system requirements.

- **Regulatory Framework for Deployment/Operation of ESS by Transmission Licensee/System Operator:** Three critical issues arise out of deployment and operation of an ESS – (i) Approval of investment in/procurement of services from ESS; (iii) Applicability of transmission charges and transmission losses; and (ii) Energy Transactions to be undertaken by a transmission licensee/system operator while operating a ESS. These are further elaborated below.

  (i) Recovery of cost incurred in provision of services, including that for ESS, by a transmission licensee or a system operator should be subject to regulatory oversight. The applicable regulations should be amended to expand the scope to include justification for investment in ESS or procurement of services thereof. The applicable terms and conditions of tariff, in case of a transmission licensee, and those applicable for the system operator would need to be amended to account for such new type of investments. Regulatory filings would also require new data formats, relevant in the context of ESS, to be submitted during tariff petitions.

  The regulatory framework should outline the criteria for undertaking the cost-benefit analysis and ex-post analysis in the form of an annual reporting on benefits actually derived from operation of the ESS. **In the absence of a sound technoeconomic analysis, the consumers would be unduly burdened by the unjustifiable cost**. The benefits expected to accrue include congestion management, reduction in system deviation on account of demand-supply mismatch, and the ancillary services support by the ESS.

  (ii) An ESS would perform a dual role within the power system, acting as a load during charging and as a generator during discharging. Applicability of the Point of Connection (PoC) charges as well as transmission losses based on its functional role needs to be clarified.

  In case of system support services including congestion management, deviation management and ancillary services, the transmission charges and transmission losses may be socialised. In all other cases, these should be applicable based on their specific role as load as applicable in the prevailing CERC framework.

  (iii) As discussed above, operation of an ESS may involve procurement/sale of energy from **the ESS. The existing regulatory framework does not provide for procurement of electrical energy for an ESS, especially that owned by a transmission licensee or a system operator . As per the Electricity Act 2003, this is specifically prohibited for a transmission licensee**. In the case of a system operator, this would fall within the context of procurement of ancillary services.

  Finally, the operation of an ESS must be fully transparent to the system operator, with real-time data on charging and discharging cycles, storage levels, and usage made available. Additionally, the economic and technical viability of ESS operations should be subject to periodic reporting and regulatory audit to ensure accountability and effectiveness in supporting grid stability, and justification of future augmentation of capacity for the ESS. The supporting data as well as the periodic report should be available in public domain.

- **Co-Located ESS in Relation to Transmission Licensees:** As per clause 18(4)(b) *"The Energy Storage System shall have the same legal status as that of the owner:*

  Provided that if such an Energy Storage System is not co-located with, but owned and operated by, the generating station or distribution licensee or consumer, the legal status shall still be that of the owner but for the purpose of scheduling and dispatch and other matters it shall be treated at par with a separate storage element."

  The terms "Co-Located" and "Non Co-Located" Energy Storage Systems (ESS) require explicit definition. In the case of transmission licensees, the ESS would be interpreted as "co-located" by default. Legal status of ESS would that be of a transmission licensee, and hence the ESS would also be subject to the applicable regulations and the grid code.

Opinion on RERC (Procedure for Grant of Connectivity to Intra-State Transmission System), 2025 [Draft]

Cite

The RERC notified "Procedure for Grant of Connectivity to Intra-StateTransmission System", 2025 issued on June 2025. The key objective of the document is mentioned below:

Objective: The draft document provides detailed guidelines for granting connectivity to Rajasthan's intra-state transmission system at 33kV and above. It outlines the eligibility criteria, application stages, and technical, financial, and legal requirements for various entities like generators, storage systems, and bulk consumers. The procedure ensures safe and efficient integration of power projects into the grid while complying with regulatory norms. It also mandates agreements, grid charges, and coordination with relevant authorities for seamless execution.

EAL Opinion

- **Include New Applicants in Clause:** In the proposed Clause 2 "*All applicants whose electrical* plants are connected to the grid at voltage levels of 33 kV and above must follow this procedure". (emphasis added)

  The clause, as presently worded, appears to be framed primarily for entities that are already physically connected to the grid. It does not clearly address cases where applicants are in the process of obtaining connectivity but are yet to be physically connected. In the present regulatory environment, many project developers apply for firm or temporary connectivity in advance of construction and commissioning. Hence, ambiguity on their treatment can lead to procedural delays or unfair rejections. The clause should be revised to cover both existing as well as prospective applicants.

- **Clear Timelines for Processing Applications:** Currently, **expected** timelines are mentioned in the procedures for processing connectivity applications with certain gaps (Figure 11). **There is no legally binding obligation or enforcement mechanism to ensure that applications are processed within a specific time frame.** This would create significant planning uncertainty for developers who rely on timely approvals to reduce investment uncertainty, to meet commercial obligations and avoid delays in declaring commercial operation dates, financial closure, and to meet power purchase agreement conditions.

  The regulations should provide a clear, stepwise timeline for each stage of the connectivity process such as acknowledgment, technical study and final grant. These timelines must be enforceable and published transparently on the utility's website. In case of delay, reasons must be documented.This will bring discipline, transparency, and

Suggested Citation: Singh, A. (ed.). (2025), Opinion on RERC (Procedure for Grant of Connectivity to Intra-State Transmission System), 2025 [Draft], Power Chronicle (Vol. 08, Issue 01, pp. 21-23), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur. https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

predictability to the process, and ensure that the process is not affected by discrimination.

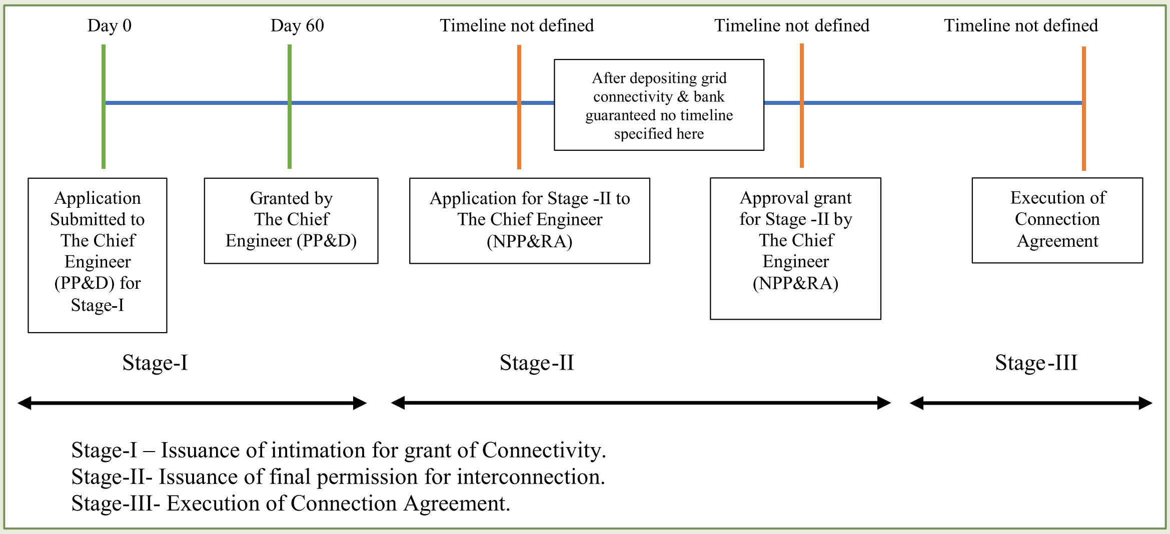


Figure 11: Gaps in Timeline for Grant of Connectivity

- **Differentiated Connectivity Across ToD or Seasonal Basis:** Given the variability of the some of the renewable energy sources (particularly wind/solar) across time of the day, and the seasonality associated with such resources, differentiated connectivity across time of the day, and/or across seasons would offer better avenues for optimization of transmission assets and create value for the power system.

  In current practice, a solar generating station may be granted connectivity for a specified capacity (e.g., 1000 MW), typically based on its expected daytime solar generation profile. However, with deployment of Energy Storage System (ESS) or use of hybrid configurations, the same project developer or another developer (generator/ESS) may be in a position to utilize the available capacity in part of in full during low solar hours, or non-solar hours such as evenings or night-time. Grant of connectivity based on time of day would enable better utilization of the transmission assets and reduce overall cost burden while also assist better power system operation.

  Similarly, seasonality associated with, particularly, wind/small hydro would provide room for grant of connectivity to alternate generators including ESS for low wind/SHP season.

  The procedure should clearly define whether the granted connectivity is restricted to a specific time window or whether the developer has the flexibility to use the full granted capacity at any time of the day, subject to the plant's configuration. Such case should be considered as a material change.The usable connectivity must be reviewed and revised accordingly, as it deviates from grid planning assumptions related to solar generation hours and could impact system reliability and fairness in capacity allocation.

- **Review Needed If Power Injection Increases Over 10%:** In the proposed Clause 4(e) *"In cases whereonce an application has been filed and thereafter there has been any material change in the location of the applicant or change by more than 10% in the quantum of power to be injected, the applicant shall make a fresh application, which shall be considered in accordance with these procedures"*. If the injected power increases by more than 10%, the granted connectivity may require system upgrades and cannot be considered final. Increases below 10% may be addressed separately. Such changes in existing connectivity should be treated as material, as they affect transmission line expenditure. The transmission system must be updated accordingly, necessitating closer coordination among stakeholders. These provisions should apply symmetrically to both increases and decreases in capacity.

  A reduction in quantum of power to be injected may be treated differently than the increase in quantum, as it is generally in the case of the later an upgradation/augmentation of the capacity may be required. However, a reduction in the connectivity requirement may impose stranded cost burden on the transmission system. The procedure should provide for assessment and recovery of the same, if the 'surrendered' capacity cannot be allocated to others within a period of 6 months. This could be in line with the regulatory framework for 'additional surcharge'. The principal regulation may require amendment to account for the same.

In the case of an ESS, there may be an increase in the quantum of power to be drawn during the charging cycle, with or without any change in the quantum of energy to be injected. The same should be provided for in the **procedure.**

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- **Allow Extension Only with Valid Reason and Charges**: In proposed Clause 8(c) "*The Power Evacuation approval granted by RVPN as per the grid connectivity procedure, will be utilized by the applicant within 3 years from the date of approval, otherwise power evacuation approval shall be cancelled and may be allocated to other Developer/Power Producers on priority basis*".

  Some applicants obtain connectivity but fail to use it within the defined timeline, thereby holding up valuable transmission capacity. Without strict conditions, this can lead to speculative booking and unfair blocking of system access creating barriers to entry for other[5].

  A solar power plant takes about 12-15 months to construct while a wind plant may take a bit longer (12-18 months) depending on size and site conditions. Grant of connectivity should be valid for a limited period, say 2 years. It has been noted that solar plant developers sometimes delay commissioning to play on change in exchange rate as well as international prices of panels. A longer time period for utilization of the granted connectivity would impose additional cost burden for consumers. If the plant is not commissioned within this time, the connectivity should lapse unless the applicant submits a valid justification such as force majeure, regulatory delays, or land acquisition issues. An extension may be granted for a maximum period of 6 months only after paying the prescribed charges to recover cost associated with the underutilized transmission assets.

[5]Singh, A. (ed.). (2025), Opinion on "HERC (Green Energy Open Access) Regulations, 2023, (First Amendment) Regulations, 2025. In Regulatory Insights (Vol. 07, Issue 04, pp. 3-4), Center for Energy Regulation (CER), Indian Institute of Technology (IIT) Kanpur.
https://CER.iitk.ac.in/periodicals/regulatory_insights/Volume07_Issue04.pdf

Opinion on MoP (Draft Amendments to the Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Project) Cite

The MoP notified Draft Amendment to the Guidelnies for Tariff Based Competitve Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Projects, 2025, issued on 25th June 2025. The key objectives of the amendments are mentioned below:

Objective: The amendments to the Guidelines for Tariff Based Competitive Bidding for Grid-Connected Renewable Energy Projects with Energy Storage Systems, notified on 9th June 2023, and amended on 17th November 2023, 2nd February 2024, and 12th February 2025, streamline power procurement. They mandate Distribution Licensees to seek Power Sale Agreement approval within 30 days of signing if not pre-approved, allow extensions of the Scheduled Commercial Operation Date for delays in tariff adoption or approval beyond 60 days from submission or 120 days from signing, and reduce the Performance Bank Guarantee from 5% to 3% of the project cost. These changes enhance efficiency and ease financial burdens for developers.

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- **Consistency with Reference to "Appropriate Commission":** In the proposed Clause 5.1 (a) **"***Any deviations from these Guidelines and/or Standard Bidding Documents (SBDs) in the draft RfS, draft PSA (if applicable) need to be approved by the* ***Appropriate Commission*** *in accordance with the process described in* ***Clause 19*** *of these Guidelines." **(emphasis added)***

  While Clause 5.1 is proposed to be amended as above, clause 19 of the Guidelines currently refers to the **"Appropriate Government"** as the authority for approving deviations from the Guidelines and/or Standard Bidding Documents (SBDs). However, other parts of the document—such as provisions related to deviations in the RfS, PPA, and PSA—refer to the "Appropriate Commission" as the approving authority.

  As per **Section 86(1)(b) of the Electricity Act, 2003**, the Commissions are empowered to "***regulate electricity purchase and procurement process of distribution licensees*** *including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State.*" (emphasis added)

  This clearly establishes that procurement of power as well as the approval of power purchase agreements fall under the jurisdiction of the SERCs/JERCs.

  To ensure **internal consistency and regulatory alignment**, it is recommended that **Clause 19 be amended by replacing the term "Appropriate Government"** with "**Appropriate Commission**." This change would reinforce the statutory role of the SERCs/JERCs in governing procurement processes and prevent ambiguity in the approval mechanism for deviations from the prescribed bidding guidelines.

Suggested Citation: Singh A. (ed.). (2025), Opinion on Opinion on MoP (Draft Amendments to the Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Wind Solar Hybrid Project), *Power Chronicle* (Vol.08, Issue 01, pp. 24), Energy Analytics Lab (EAL), Indian Institute of Technology Kanpur.
https://eal.iitk.ac.in/assets/docs/power_chronicle_vol_8_issue_1.pdf.

Clause 19 "*In case it becomes imperative for the Procurer/intermediate procurer to deviate from these Guidelines and/or the SBDs, the same shall be subject to approval by the* ***Appropriate Government*** *before the initiation of bidding process itself. The Appropriate Government shall approve or require modification to the bid documents within a reasonable time not exceeding 60 (sixty) days*".

https://cercind.gov.in/Act-with-amendment.pdf

Regulatory Certification Program on “Power Sector Regulation: Theory and Practice”

CER, in collaboration with EAL, conducted the Regulatory Certification Program titled **"Power Sector Regulation: Theory and Practice"** from 6th to 22nd June 2025. This program, organized under the aegis of the Centre for Continuing Education, IIT Kanpur, aimed to provide an in-depth understanding of power sector regulation in practice, grounded in fundamental economic principles.

The inaugural session was graced by Dr. Rajesh Sharma (Chairperson, RERC), as the Chief Guest.

Key speakers for the program included Mr. Arun Goyal, Mr. S. C. Shrivastava, Mr. H. T. Gandhi, Ms. Shilpa Agarwal, Mr. Anup Dutta, Mr. Vivek Mishra, Mr. Ghanshyam Prasad, Adv. Buddy A. Ranganadhan, Mr. Bijoy Kumar Sahoo, Dr Srini Parthasarathy, Dr. Raj Addepalli, Prof. Tooraj Jamasb, and Prof. Anoop Singh.

Dr. Devaraju Nagarjun (Chairman, TGERC), 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 sector.

Regulatory Certification Program

Registration is now open for the 5th **RCP on “Power Market Economics and Operation”** scheduled from 30th August to 14th September, 2025. This online program provides insights to the economics, operation & regulatory aspects of power market. Key topics include Economics of Power System Operation, Power Procurement Planning, Deviation Settlement Mechanism, Power System Operation, Resource Adequacy, Derivatives and more.

For more information and registration

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