ENERGY ANALYTICS LAB
Department of Industrial and Management Engineering
Indian Institute of Technology Kanpur

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Power Chronicle

Power System Overview & Analysis

Power Market Overview & Analysis

Regulatory & Policy Perspective

Editorial

Driven by the recovery of industrial activity, particularly in the western region, electricity demand is on a path to growth as peak demand during the previous quarter surged beyond that recorded last year. While the pace of capacity addition in the renewable energy sector has temporarily slowed down, the RE peak generation witnessed a small reduction compared to the same quarter in the previous year.

Distribution utilities across states have been engaging in active management of short-term portfolios by engaging in short-term purchase and sale of electricity based on the economic opportunities presented by the market.

Amongst the larger states, Gujarat, Odisha, Himachal Pradesh, Karnataka, Telangana, Uttar Pradesh, and Delhi have been relatively more active in the short-term power market. The emergence of Real-Time Market offers another platform for portfolio rebalancing and enables utilities to address the uncertainty associated with supply from variable renewable energy sources. The RTM market continues to be exhibited by higher volatility, as buyers and sellers seem to respond to the uncertainties emerging in the short-term horizon.

A recent draft proposal aims to enable the DISCOMs to either continue or exit from the central sector PPAs, post end of the PPA term, while allowing flexibility to the Generators to sell the surrendered power through alternate modes. The proposal needs to be fine-tuned, particularly by providing flexibility in surrendering the part of the PPA, both in terms of quantum and scope across different hours of the day. EAL proposed that a room for negotiation of the expiring PPAs may itself offer greater stability in partial recovery of the fixed cost to the generators while enabling the DISCOMs to benefit from flexibility in managing their short-term portfolio.

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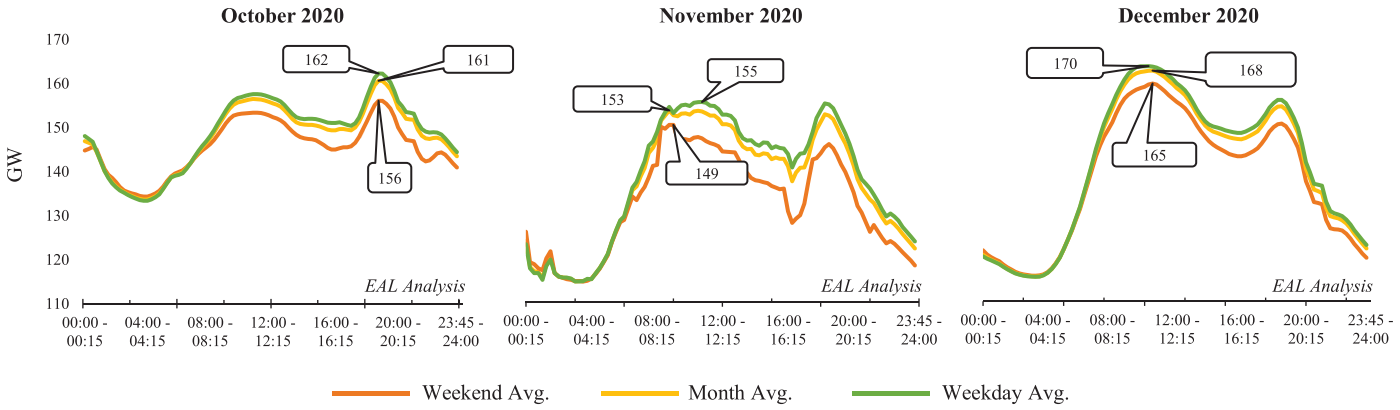
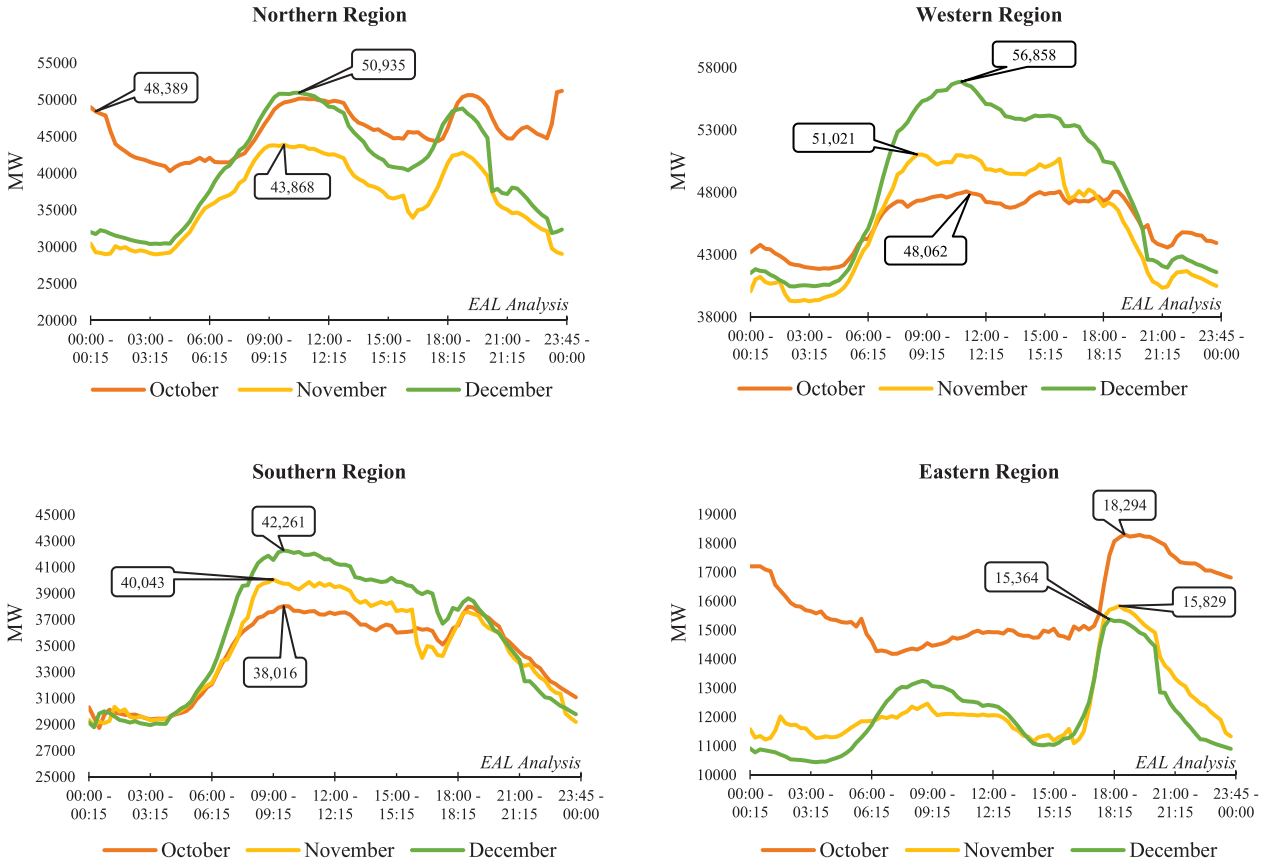
Power System Overview & Analysis

All India Demand Met Profile

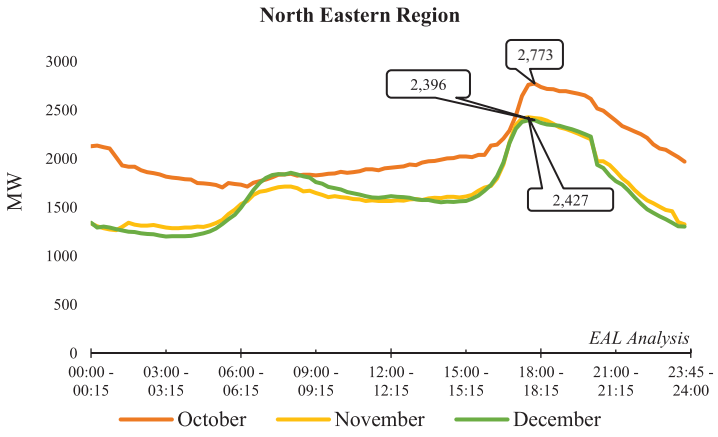


During October to December quarter, all India peak demand reached 182.65 GW on 30th December, 2020 (09:45-10:00), about 7.14 percent higher than the previous year's peak demand recorded at 170.47 GW on 26th December, 2019 (11:45 - 12:00) during the same quarter.

Region-wise Demand Met Profile

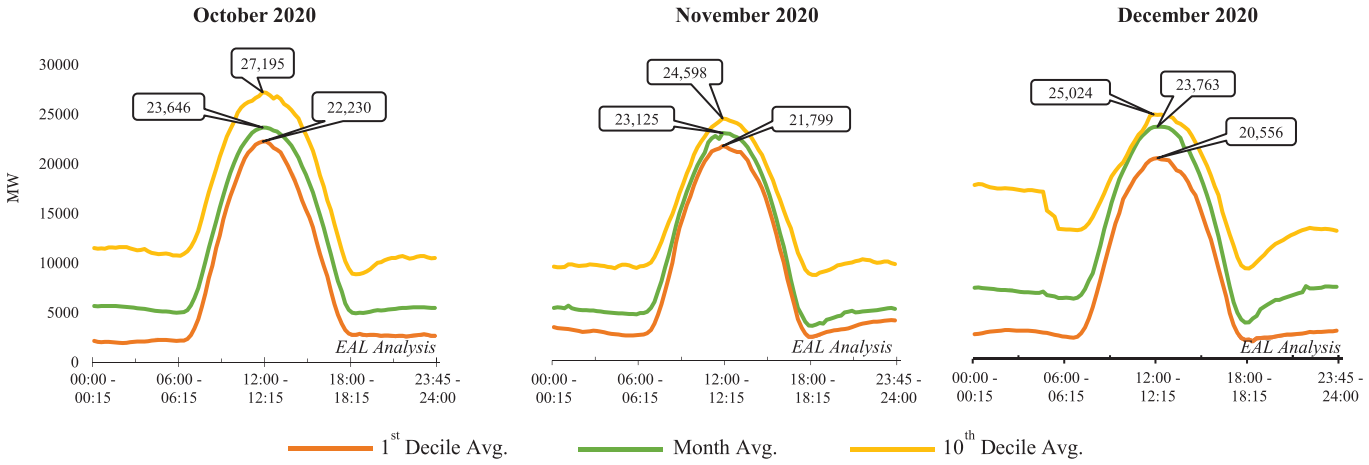


Demand and generation profiles at national, regional and state-level can be accessed on EAL's web portal.



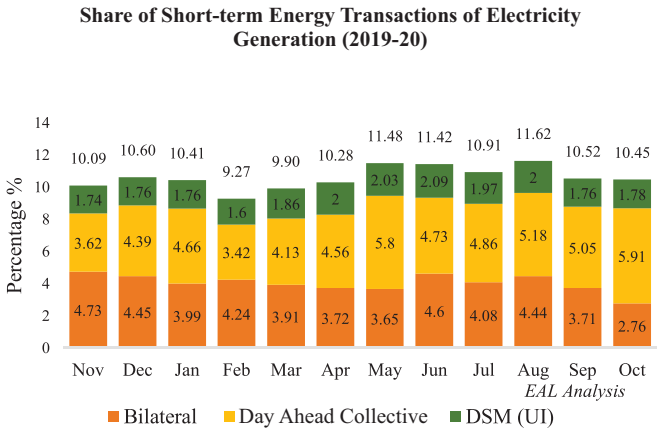
- Significant variation in demand profile can be seen across the months of October, November and December across some of the regions. While the Northern region witnessed significant decline in electricity demand during night hours in November and December, the Western region witnessed spike in electricity demand during the day in the month of December.
- Significant recovery in electricity demand, particularly in the Western region, seem to highlight economic recovery led by the industrial sector.

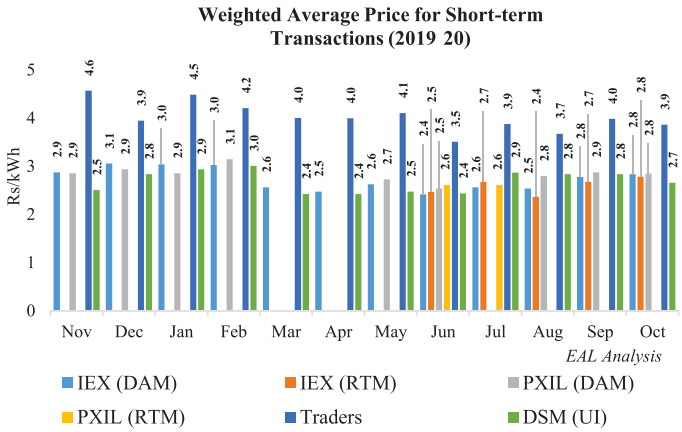
All India Renewable Energy (RE) Generation Profile



All India peak RE generation reached 28.08 GW on 21st Dec, 2020 (11:15 - 11:30). It was about 4.50 percent lower than the previous year's peak generation of 29.41 GW recorded on 23rd Dec, 2019 (14:30 – 14:45) during same quarter.

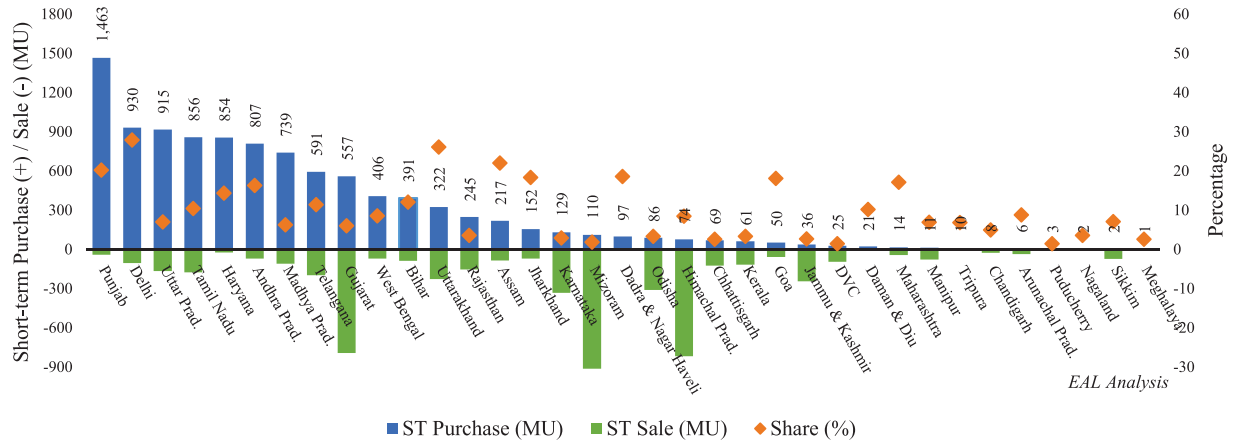
Short-term Energy Transactions



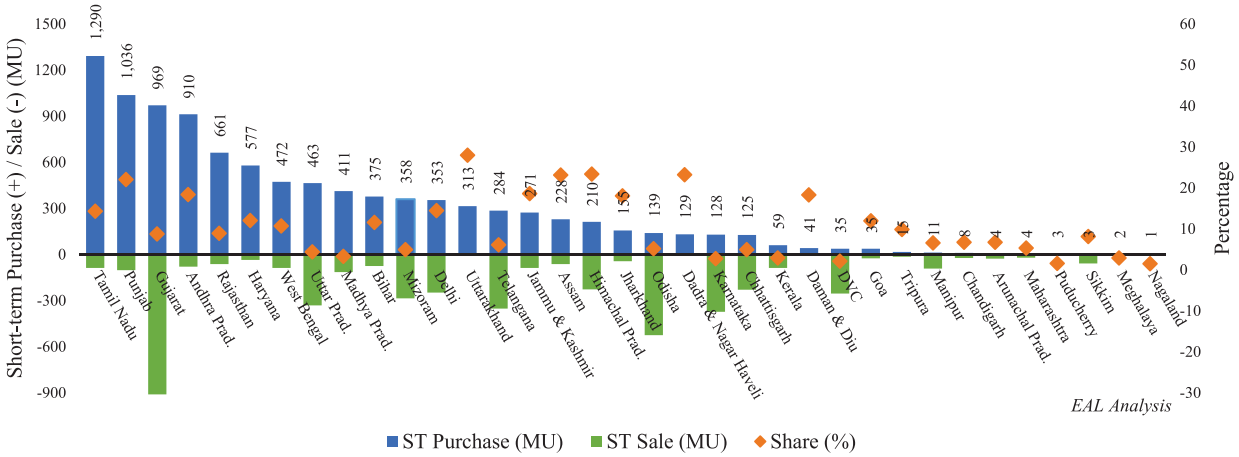


Monthly Short-term (ST) Purchase and Sale Quantum across States

ST Energy Sale, ST Energy Purchase and Share of ST Purchase in Total Energy Supplied (September 2020)



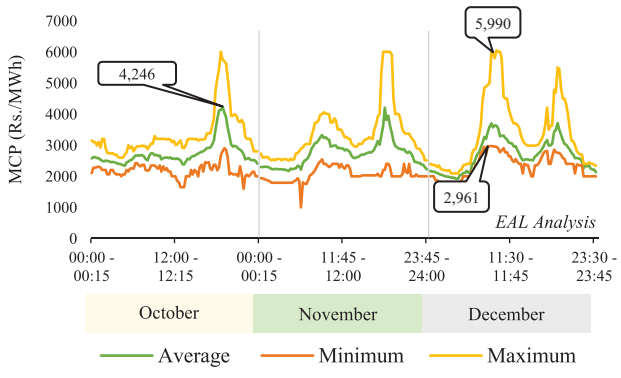
ST Energy Sale, ST Energy Purchase and Share of ST Purchase in Total Energy Supplied (October 2020)



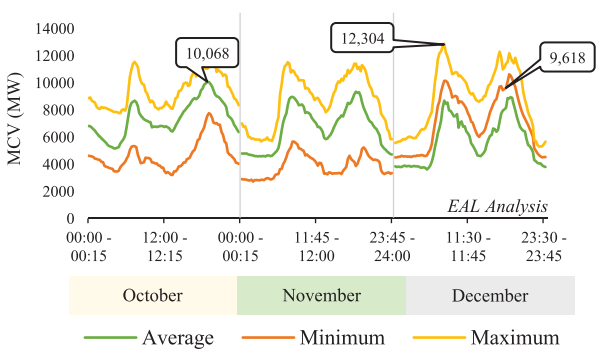
Power Market Overview & Analysis

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

DAM Monthly Average, Maximum & Minimum MCP

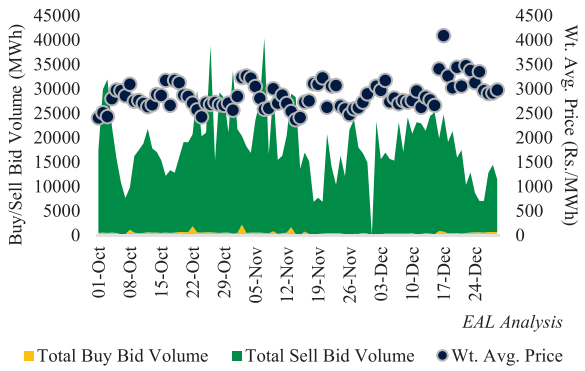


DAM Monthly Average, Maximum & Minimum MCV

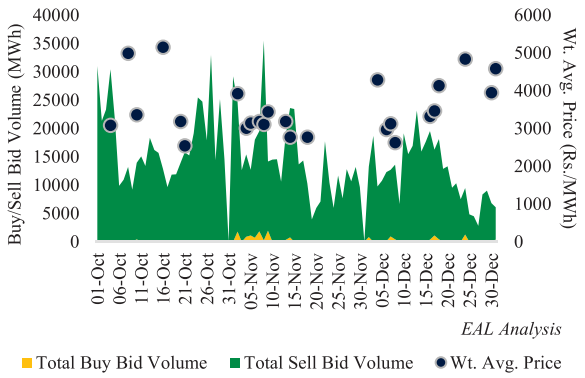


Term-Ahead Market (TAM)

Daily Day-Ahead Contigency Transaction



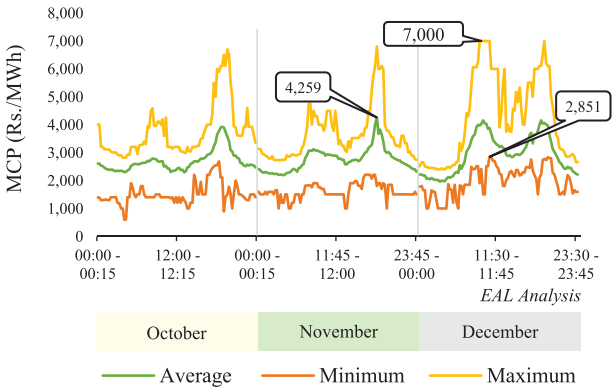
Daily Intra-Day Transaction



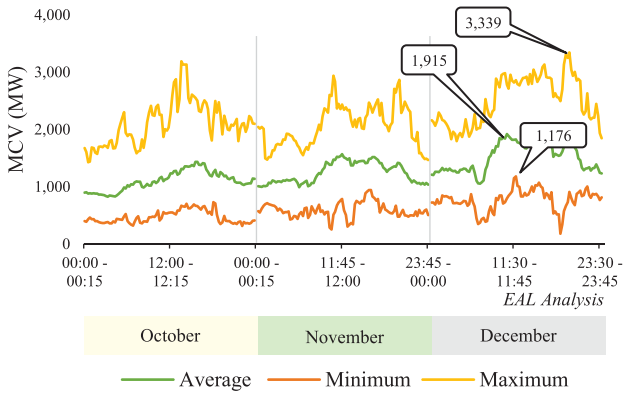
The weighted average clearing price observed in Intra-day market during October to December quarter is high in comparison to the Day-ahead contingency market. Also, the quantum of sale bids in TAM continues to significantly higher than the purchase bids placed.

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

RTM Monthly Average, Maximum & Minimum MCP

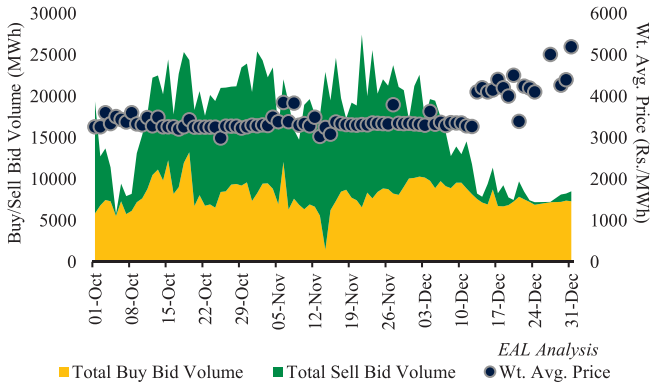


RTM Monthly Average, Maximum & Minimum MCV

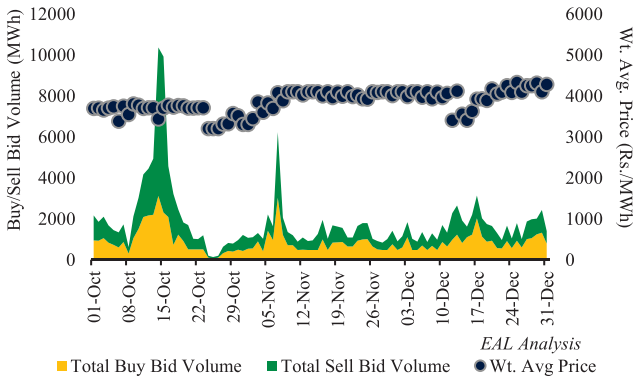


Green Term-Ahead Market (G-TAM)

Day-Ahead Contingency - Solar



Day-Ahead Contingency - Non Solar



The weighted average clearing price for Day-Ahead Contingency Transaction - Solar were observed to be high in comparison to Non-Solar during the latter half of December. Also, the proportion of sell and purchase bids in Solar is higher when compared to the bids placed in Non-Solar.

Regulatory & Policy Perspective

MoP's draft proposal on Relinquishment of PPA beyond Tenure

Ministry of Power released a draft proposal on 4th Dec 2020 on "Enabling the DISCOMs to either continue or exit from the PPA after completion of the term of the PPA i.e., beyond 25 years or a period specified in the PPA and allow flexibility to the Generators to sell power in any mode after state/DISCOMs exit from PPA". The key highlights of the draft are summarized below.

Summary of key points of the draft proposal

1. The draft proposes for relinquishment or continuance of power purchase share by state/DISCOMs from Central Generating Stations (CGS) after the end of the term of the PPA, i.e., on completion of 25 years from the date of commissioning of the plant or the period specified in the PPA. Such PPAs will stand terminated.
2. The state/DISCOMs which have long-term PPAs with CGS and such PPAs have expired or due to expire in near future can opt to relinquish their allocated power from such CGSs post completion of the PPA tenure.
3. In order to relinquish the entire allocated power from those plants which have completed the PPA tenure of 25 years, the state/DISCOMs need to give a three-month prior notice to the CGS with an intimation to MoP.
4. Power once relinquished by the state/DISCOM can not be taken back from the concerned CGS under the same PPA terms and conditions.
5. The first right is given to the state/DISCOMs, for continuation or surrendering of power from CGS even beyond the tenure of PPA, as the state/DISCOMs have paid the entire fixed cost.
6. The state/DISCOMs which are willing to surrender their PPA, can avail power from other power procurement routes such as short-term contracts, day-ahead, real time market, bilateral transaction through open access, etc.
7. The state/DISCOMs have to exit from the entire PPA, in case of Bulk Power Supply Agreement (BPSA).
8. The CGS will be allowed to sell the power relinquished by a state/DISCOM through following routes:

   a) Long term PPAs or Medium term PPAs (upto 5 years) or short term PPAs with willing buyers.

   b) Day-ahead (DAM), Real-time market (RTM) and Term-ahead markets (TAM) through power exchanges.

   c) Reallocation to willing buyers at regulated tariff as per the extant provisions of reallocation of power from CGSs.
9. The proposal is expected to increase supply liquidity in the short-term power market, reduce congestion in the system, and improve efficiency and the financial status of the state/DISCOMs.

EAL's Opinion on MoP's draft proposal on Relinquishment of PPA beyond Tenure

- **Benefits of PPA Relinquishment:** Relinquishment of old PPAs would provide a relief to those states/DISCOMs which have excess PPAs by reduction in the fixed charges as well as overall reduction in the burden of transmission charges. The states/DISCOMs surrendering power would still have an option to buy the same 'surrendered capacity' through the market, likely at lower price than existing PPA. This will motivate the DISCOMs to be proactive in their power procurement management. This would also be beneficial for the development of the power market in the country as it will infuse additional liquidity in the market.

Given that this option is available for PPAs completing 25 years, generators would have recovered their fixed cost and can now explore new opportunities.

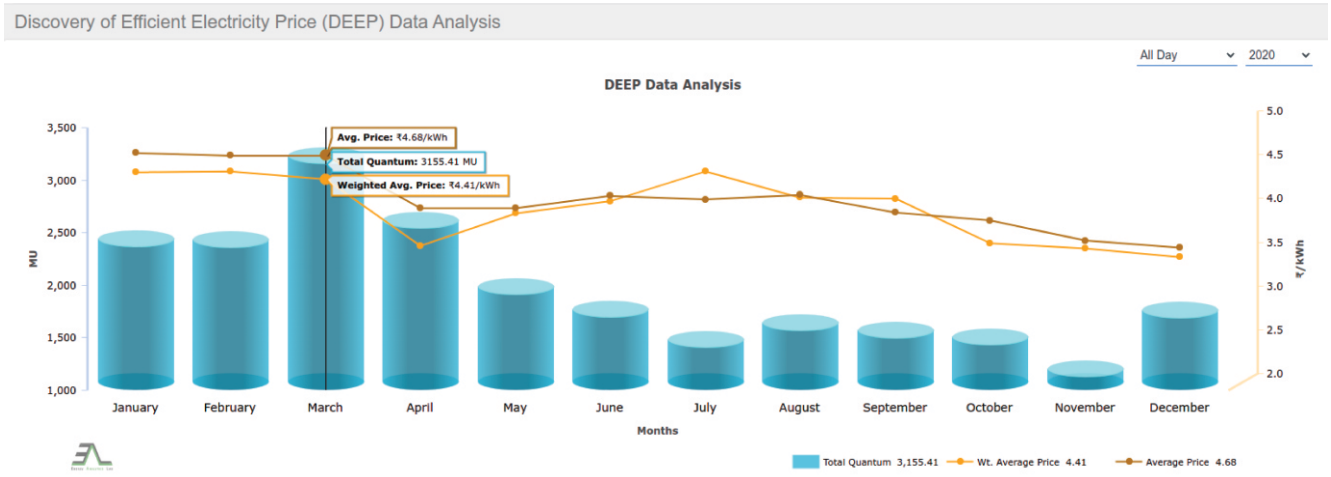
- Plants with recent CapEx: It should be clarified if PPA relinquishment is possible in case of such plants wherein additional capitalization was undertaken in recent past (prior to completion of 25 - year tenure of PPA), and which is yet to be depreciated to the allowable limit, and wherein the associated debt repayment (if any) has only partially been undertaken.
- Modification of Terms and Conditions of PPAs (Clause 3 (5) & 7 (a) (3)): The draft proposal should provide for a state/DISCOM relinquishing its share in a central generating station to sign a new PPA with CGS under modified terms and conditions which can be attractive for the state/DISCOM.
- Embargo on taking back the surrendered capacity share: A state surrendering its share in CGS may not be excluded to take back the surrendered capacity at a later date. The condition Clause 3 (7) (a) (3) should thus include the surrendering state within definition of 'single buyer'.
- Competitive Bidding for Surrendered Power (Clause 3 (7) (a)): The relinquished capacity of central generating station should preferably be offered through a process of reverse bidding, with regulated tariffs as a ceiling.

  Most of the power surrendered by the states/DISCOMs would generally have higher variable and fixed charges burden. Therefore, such expensive power plant, once relinquished by states can only survive in the market when the generators are able to bid lower than the existing variable charges, and thus would have to endeavour to decrease their variable cost.
- Discount on Regulated Tariff (Clause 3 (7) (a) (3)): Since the surrendered power, being expensive and surplus, does not have sufficient offtake through the URS route, offering the same capacity at regulated tariff may not be attractive enough for the potential buyers. The generator, whose capacity has been surrendered by a beneficiary, should have the option of offering the same to the willing buyers at a discount to the regulated tariffs.
- Time/Season Based Power Relinquishment: Some of the beneficiary DISCOMs may have excess power only during off-peak hours, and may like to retain the capacity during peak hours. Similarly, there may be seasonal surplus with the beneficiaries. The flexibility to relinquish the PPA only for the identified season, time blocks of the day, and weekdays/weekends would allow better optimization of power procurement portfolio by the DISCOMs.

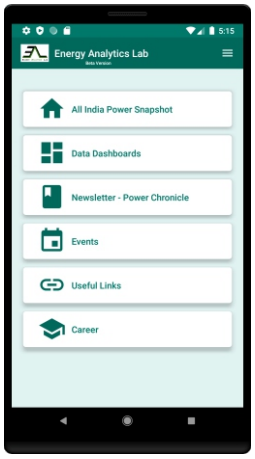
  Such an option for surrendering the PPA capacity will also reduce annual fixed cost burden for the beneficiary DISCOMs, and would incentivise them to retain the modified PPA. An appropriate regulatory mechanism would be required to determine the regulated fixed charges in such cases.
- End of Life Plants and FGD Investment: Power plants nearing the end of life and needing significant FGD investment, would witness significant increase in regulated tariff. Such plants, even though which may not have completed 25 years of PPA, may also be eligible for relinquishment of capacity under the draft proposal.

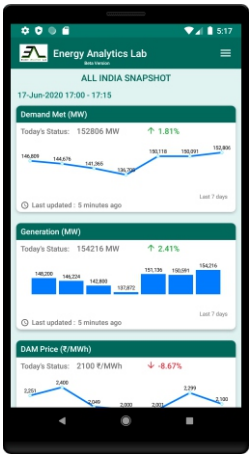
EAL News

EAL has launched a new dashboard on analysis of DEEP Transactions (month-wise and contract-wise) providing relevant information on short-term power procurement to the users.



EAL's Android App





EAL's Android App is continuously being upgraded, stay connected and update it periodically from Google Play store to have seamless access to the EAL's resources.

It can be downloaded using the link

https://play.google.com/store/apps/details?id=e.admin.eal_app.

We want to take this opportunity to thank you for being an active member of EAL's web portal. We hope that you find this as a meaningful and insightful initiative.

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