

**CENTRAL ELECTRICITY REGULATORY COMMISSION  
NEW DELHI**

**Petition No. SM/351/2013**

**Coram:**

**Shri Gireesh B. Pradhan, Chairperson**

**Shri V.S. Verma, Member**

**Shri M. Deena Dayalan, Member**

**Shri A.K.Singhal, Member**

**Date of Order: 8.1.2014**

**IN THE MATTER OF**

Improvement of Market Efficiency by information dissemination through display of Aggregate Demand and Supply Day Ahead curves by Power Exchanges on their website.

**Order**

Section 66 of the Electricity Act, 2003 provides for development of market (including trading) in power as under:

"66.Development of market- The Appropriate Commission shall endeavour to promote the development of a market (including trading) in power in such a manner as may be specified and shall be guided by the National Electricity Policy referred to in Section 3 in this regard."

2. The Regulation 57(ii) of the Central Electricity Regulatory Commission (Power Market) Regulation, 2010 provides that the Exchange shall display the prices, volumes and historic prices on its exchange which should be in downloadable format.

3. Accordingly, on 3.9.2013, the Commission published a Staff Paper on “Improvement of Market Efficiency by information dissemination through display of Aggregate Demand and Supply Day Ahead curves by Power Exchanges on their website” for inviting views and suggestions from the stakeholders.

4. The proposal in the Staff Paper aimed towards improving market efficiency by bringing transparency in the markets and by enabling market participant to take informed price decisions. The salient features of the proposal are as under:-

**(a) Information Dissemination:** The aggregate demand and supply curves will provide a plethora of information to all market participants, such as for instance a complete picture of demand and supply in day ahead market, elasticity and liquidity of demand and supply, quantum of unutilized supply and unmet demand, demand and supply bid patterns in different hours and different seasons to name a few. Apart from this, there could be several other inferences drawn by market participants. Importantly, from a market design perspective, the day ahead market which can be considered to be the market at the margin or a balancing market, the marginal cost curve and the marginal utility curve of the market will be available in the public domain. This will be of immense interest not just to economists and market analysts but also to engineers since it can be an important information input to improve the operational efficiency of the generators in a competitive market. Presently different market participants have different set of information, thereby leading to information asymmetry. Display of aggregate

demand and supply curves on Power Exchanges' website will empower the market participants with more information and help them to take more informed decisions.

**(b) Price Transparency:** From a transparency perspective, this would create a check and balance on the power exchanges themselves and on large market players. Any abnormal bid patterns can be easily identified by the market and analyzed by the market participants. This would help to decentralize market monitoring and introduces self-imposed market monitoring by the market participants. This is particularly relevant since the day ahead auction is a closed bid auction presently.

**(c) Research and Development:** This will release large amount of primary data in the public domain for research by power market analysts, academia and planners and can help in further development of the market. Additionally, this may also give a fillip to the intra-day market since information about the left over supply and unmet demand along with the indicative prices for aggregate demand and supply after the day ahead market will be known to the market participants.

5. The Commission has received comments from the following five stakeholders:

- (a) Indian Energy Exchange Ltd.
- (b) Power Exchange of India Ltd
- (c) Tata Power Trading Ltd.

- (d) Association of Power Producers
- (e) Power System Operations Company

6. The summary of comments of stakeholders is as under:

(a) Indian Energy Exchange Ltd. has submitted that before introducing display of information i.e. aggregate demand supply curve, it is essential to examine whether this information would actually be fruitful for the market participants. IEX is stated to have examined the feasibility of the display of proposed information with reference to the international practices and impact on buyers and sellers as under:

(i) International Practices: One of the premises justifying display of Demand Supply curves (aggregate curve for split regions) is that internationally such curves are displayed by the Power Exchanges. It may be imperative to note here that most of the Exchanges do not display such curve on their website. Even if some of the Exchanges display such graph, it would be very crucial to look into what other precautions and regulatory measures are being taken to avoid any possibility of market abuse. Therefore, the market scenario and regulatory/policy environment of the countries in which such Exchanges are operating need to be considered carefully. For example, APX ENDEX which is undertaking transactions for UK, Netherlands and Belgian market shows Demand Supply curve on its website. Along with this provision, the European Commission (EC), regulator of APX ENDEX, has adopted stringent rules for providing information to

an independent body set up to oversee any market abuse which may distort wholesale energy prices. For this purpose EC has formed an Agency for the Cooperation of Energy Regulators (ACER) for independent monitoring of all the trades and other information from major Generators having capacity above 250 MW. It has been mandated that these Generators supply information about availability of plant capacity so that possibility of withholding capacity to benefit from the market can be checked. How withholding of capacity can be used to the advantage of the Generator in an illiquid market, is well known. IEX has highlighted the provisions of EC market Regulations to understand market monitoring scenario in European Market.

(ii) While displaying, these curves could be useful for few. However, if it is done without putting in place a proper mechanism to monitor such abuses on regular basis without any time lag, it could in fact be counterproductive.

(iii) Impact on buyers and Sellers: With the present low liquidity in the market, particularly in the congested areas, participants may be identified from the curve which may be against their interest as their commercially sensitive data would get shared in public domain. This situation would be more predominant in the exchange which has only few bids, and most of the time, there is only one bid in a bid area. Presently the Commission has consciously chosen a closed bid auction with the intent to aggregate liquidity for robust price discovery and to ensure all buyers and sellers are treated equally and also that these participants

submit their bids based on their marginal cost (sellers) or marginal utility (buyers). Even if display of the aggregate curves is being contemplated post the auction, the buyers and sellers would get influenced as majority of participants are participating on the Exchange on Daily basis

(iv) IEX has submitted that from the above discussion, following inferences can be drawn:

(a) Numbers of sellers or buyers in the split region are generally very few and seller can easily find its stand on the curve.

(b) In present scenario, i.e. non-disclosure of demand supply curve, seller/buyer is generally bidding close to its marginal price/utility. While as per the proposal with the knowledge of bid curves, dominant player in the bid area can influence the prices where as his counterparts, because of competition amongst themselves, would not be in a position to react to such information. This will skew the benefit in favour of dominant participant (seller or buyer as the case may be).

(c) The dominant participant of the area can get 2-3 times the price by just manipulating its bid volume slightly.

(d) The bidding behavior of the participants would also get influenced now and they would not stick to their respective marginal price/utility, which is the main advantage of present double sided closed auction.

(e) Such practice would ultimately frustrate the competitiveness of the market and may be counterproductive to the development of the market.

(f) Small consumers may in fact suffer due to display of information, as prices may be influenced by dominant player and therefore, this would be against the principle of “greatest good for the greatest number” and may harm the nascent market.

(g) As far as informed decision by market participants is concerned, Market Clearing Price and volume are best indicators on the basis of which a participant can take decisions. In the present system, participant has to submit bid quantity as per its requirement and price based on the marginal cost/utility, therefore displaying curves would not help in arriving at their respective bids.

(h) This information can only be revealed in a perfectly competitive market where no single player can change prices which is not the case due to constraints in the transmission corridors.

(vi) Market Share of the Exchanges: The present market share of the Day Ahead market of Exchanges is only 2.54% (Financial Year 2012-13) of the total electricity generated in India. It is insignificant volume to derive any macro level conclusions regarding behavior of the power market in the country. Even the electricity traded by trading licensees and UI volumes are more than the power traded on the Exchanges. Therefore, in the present market scenario where market share of Exchanges is insignificant for any conclusion, it would not be feasible to display aggregate demand-supply curve in the public domain. The Indian power market should grow to such levels before starting displaying bid curves in the public domain.

(vii) In present market scenario, proposal regarding Aggregate Demand and Supply Curves by Power Exchanges may be postponed and should be taken up when high liquidity with minimum congestion is achieved on Power Exchanges and also requisite mechanism is put in place to ensure that there is no possibility of market abuse by dominant players due to this information.

7. Power Exchange of India Ltd (PXIL) has submitted as under:

(i) PXIL operates an efficient, transparent and secure IT based trading platform. The market data collated on conclusion of day ahead trade can be used by traders, generators, distribution licensees and open access consumers to make informed decisions.



(ii) The price discovered in the market would enable all the market participants to have portfolio optimization principles in place where risks and rewards are commensurate to each other.

(iii) PXIL agrees that availability of information would help promote Intra-Day transactions on the Exchange and deter participants from resorting to UI based transactions to address their requirements.

(iv) PXIL agrees with the observation that the current provisions of Regulation 57 of the Power Market Regulations do not specify that the Exchanges are required to display information about aggregate demand and supply bids received in the Day Ahead Market.

(v) It was informed to the Commission that adequate development time is required for display of area-wise and time block wise aggregate supply and demand bids received in the Day Ahead Market. The Exchange has to make capital investment for displaying this information on its website.

(vi) PXIL agrees that market based information would help promote competition among participants and deter any kind of abuse by a participant. The non-availability of sufficient liquidity at an Exchange should not hamper progressive steps made towards organized development of markets in electricity.

(vii) It has implemented various measures to increase retail base in number of States which would lead to substantial increase in number of participants who transact on the Exchange. In addition, the second amendment to Short term Open Access Regulations providing for Exchange neutral 'No Objection' or 'Prior Standing Clearance' would lead to increase in the number of buy and sell bids submitted at PXIL over the next few months.

(viii) In the initial stages, the Exchanges would display the aggregate demand and supply curves for the final cleared market of the day, in future this information can be made available for longer duration (week, fortnight, etc.).

(ix) In case of Market splitting, the Exchanges would display the aggregate demand and supply curves for applicable regions that are affected due to market splitting.

(x) The actual time frame for implementation of 15-minute block wise and region wise aggregate demand and supply curves cannot be identified at this stage. However, PXIL would participate in a pilot project based on discussions with the Commission.

8. Tata Power Trading Ltd has submitted that display of aggregate demand and supply curve on Power Exchanges websites will definitely help the participants to

analyse power market better and also in arriving at appropriate bids in terms of volume and price in day ahead market. This can be a step towards real time continuous market trading in future. Aggregate demand and supply data will be useful for planning investments in Transmission and Generations sectors. This is an excellent endeavour of CERC which would prove to be very useful in developing power market. However, the bidding patterns of buyers and sellers could undergo change due to availability of additional information. The impact of this pattern on market may be monitored in the pilot run as suggested in the paper. Display of day ahead aggregate demand and supply curves for each 15 minutes time block for each bidding region should be displayed on Power Exchanges websites.

9. Association of Power Producers (APP) has reiterated the submissions of the PXIL. APP has proposed as under:

(a) On a daily basis, region and state wise information regarding no. of buy bids and no. of sale bids along with their bid volumes will give trends of power sell/procurement by various entities and will also indicate elasticity and maturity of market. It will help in understanding power supply positions of various states and various factors affecting the power supply position. It would also help participants to anticipate transmission congestion in a specific region which would further give an option to sell/purchase power through OTC/other platforms.

(b) In making Open Access a reality, market should be informed about number of clients of different type's e.g. industrial consumers, commercial consumers or any other clients which are participating in power market through the platform of Power Exchanges. Market should also be updated as to whether how many States Discoms and private Discoms are buying and selling power regularly through Power Exchanges. It would give trend of 'Open Access' being allowed/ denied by different States and will reflect the extent of 'openness' of power market as envisaged by Electricity Act 2003

10. Power System Operation Corporation Ltd. (POSOCO) vide its letter dated 24.6.2013 has submitted as under:

(a) At present, only the final area prices in each time block are being made available in public domain through the Power Exchange portals. As per the international best practice, being followed by several utilities, the aggregate demand and supply curves are also available in public domain which show the sum of all demand bids and the supply bids with prices and quantum in each time block along with the final equilibrium price reached. It is desirable that Power Exchanges of India also make the total aggregate demand and supply bids in each time block and area, indicating price and quantum offered available transparently through their portals, besides and final equilibrium price.

(b) Since inception from Power Exchange, the volume transacted on Power Exchanges has steadily increased and the participation in Power Exchanges has also grown considerably which illustrates the confidence reposed by the stakeholders in this mechanism and thereby reinforcing the level of maturity been achieved by this market mechanism. A well designed market warrants the availability of information at no transaction cost which will enable stakeholders to optimize their decisions and thus make the markets more transparent and efficient.

(c) The aggregate curves can show the willingness of buyers and sellers to buy and sell at each price, vis-à-vis the equilibrium price achieved. This data can further be indicative of market trend and indicate market elasticity and liquidity, and the same can be further used by all concerned including policy makers and regulators for analysis and in the long run, these can further be used to improve market design and structure.

11. We have examined the comments of stakeholders and our observations on the issues are as under:

(a) PXIL, Tata Power Trading, Association of Power Producers, POSOCO have supported the proposal and have requested to implement the same.

(b) IEX has raised concerns in relation of display of demand and supply curve in case of market splitting, especially where number of buyers and seller is less in a bid area and possible abuse of the information by a dominant player. IEX has suggested strong market surveillance and process to check any market abuse before implementation of the proposal.

(c) The Commission appreciates the underlying concern regarding display of demand and supply curve. Therefore, it is decided that in case of market splitting, separate bid areas curves shall not be published and only national level aggregate level curve shall be published for each time block. This would put to rest any concern of abuse of information by a dominant player as the number of participants at the national level is very large and an individual participant will not be able to move the market. As a measure of abundant caution, the impact of the proposal would be reviewed along with the Power Exchanges and other stakeholders after period of six months to decide the way forward.

(d) Both power exchanges have sought time for implementation of the proposal. Since it will entail modification in software of the trading system and testing of the same, this Commission intends to implement the proposal from 01.4.2014 so that Power Exchanges may be able to modify the software and conduct validation tests.

(d) With regard to the observations of Association of Power Producers regarding display the number of buyers and sellers in each region and State on a daily basis, we are of the considered view that the total number of buyers and sellers at the national level should be displayed since State-wise information is prone to be misused by a dominant player especially in the light of the fact that the number of Power Exchange based transactions in each State may not be high. As far as information regarding number of open access consumers on Power Exchange is concerned, the detailed State-wise data is already being published as a part of the Annual Short Term Power Market report. This report is made available in public domain by circulating a copy to power sector stakeholders and is also available on CERC's website.

12. In view of the above, the Commission is of the view that the proposal for display of aggregate demand and supply curve would be a positive step towards development of power markets. This would significantly contribute towards information dissemination, bring transparency in the markets and help market participants to take informed price decisions. Therefore, we direct Power Exchanges, namely, Indian Energy Exchange Ltd and Power Exchange of India Ltd to implement the following for day ahead markets:

(i) The National Level aggregate demand and supply curves (price and quantity) for the unconstrained cleared markets after the completion of auction and final price discovery shall be displayed on their websites. 'National level'

means aggregation of all bid areas defined by NLDC for bidding on Power Exchanges.

(ii) Information about the total number of buy bids and sell bids at the unconstrained cleared price shall be displayed.

(iii) The curves shall be displayed for each 15 minute time block of the day.

(iv) The information about any individual participant shall not be displayed.

(v) The curve shall be displayed at the same time when the final prices results for day ahead market are published on the website. This information shall be over and above the cleared prices of different bid areas presently being displayed for the day ahead markets.

(vi) The curves shall be available on the website for a period of 1 year from the date of publication. This shall be implemented for the results of day ahead auction held on 1.4.2014.

(vii) The Power Exchanges shall closely monitor the market through their market surveillance departments and monitor the bidding behavior of participants



to check market abuse, if any. The Commission would review the results with the Power Exchanges and other stakeholders, depending on the necessity, after 6 months of issue of this order, to decide course correction, if any, required.

13. The petition is disposed of with the above directions.

**Sd/-**  
**(A.K.Singhal)**  
**Member**

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**(M.Deena Dayalan)**  
**Member**

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**(V.S.Verma)**  
**Member**

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**(Gireesh B.Pradhan)**  
**Chairperson**