

Central Electricity Regulatory Commission
New Delhi
Petition No. 158/MP/2013

Subject : Petition under Regulations 63 and 64 of Central Electricity Regulatory Commission (Power Market) Regulations, 2010 for removal of difficulty arising due to present method of Transmission Corridor Allocation to Power Exchanges for Collective Transactions

Date of hearing : 5.6.2014

Coram : Shri Gireesh B. Pradhan, Chairperson
Shri M. Deena Dayalan, Member
Shri A.K.Singhal, Member

Petitioner : Power Exchange India Ltd.

Parties Present : Shri S G Tenpe, PXIL
Shri Kapil Dev, PXIL
Prof. S.A. Soman, Professor, IIT Bombay
Shri Akhilesh Awasty, IEX
Ms Shruti Bhatia, IEX
Shri Gaurav Maheshwari, IEX

Record of Proceedings

The representative of the petitioner submitted that present petition has been filed under Regulations 63 and 64 of the Central Electricity Regulatory Commission (Power Market) Regulation, 2010 (hereinafter referred to as "Power Market Regulations") for seeking changes in transmission corridor allocation methodology for collective transaction.

2. The representative of the petitioner submitted that NLDC allocates transmission corridor between the two Power Exchanges. The petitioner enunciated steps used by NLDC to allocate the transmission corridor as under:

- (a) Exchanges run unconstrained matching considering all buy and sell orders on their respective platforms assuming infinite flows on inter regional transmission corridors.
- (b) Provisional flow is communicated to NLDC by each Exchange.

(c) NLDC compares power flow requests with actual flow feasible on the corridor and allocates corridors to both Exchanges on pro-rata basis.

3. The representative of the petitioner submitted that the smaller Exchange gets lesser quantum of business whereas the bigger Exchange gets larger quantum. He further submitted that in June 2008 order, the Commission while approving the pro-rata methodology had also observed that the methodology may require course correction and fine tuning based on experience gained in future.

4. The representative of the petitioner submitted that in the 14th CAC meeting of the Commission held in September 2010, there was a consensus that pro-rata allocation of transmission corridor between Exchanges was not the optimum solution and requires study to find out a model to address the issue.

5. The representative of the petitioner further submitted that a smaller or new Exchange cannot come with a bulk volume on its platform. This leads to a situation where in the transmission corridor allocation is less to the smaller/new Exchange and gives signal to the participants that the trade/volume clearance on the smaller exchange would be doubtful and the participants would therefore be more comfortable on the exchange where clearance of volume is much more. He further submitted that the current practice of pro-rata allocation defeats the multi-exchange model.

6. The representative of the petitioner submitted that as per the data available with the Commission's website, the curtailment of transmission on PXIL is 72% whereas the curtailment of IEX is in the range of 20-27% and this curtailment does not give appropriate signal to the participants and is leading to discrimination among the participants.

7. In response to the Commission's observation that the percentage of curtailment is high for PXIL since its base is small, the representative of the petitioner submitted that PXIL has proposed a new methodology allowing to which equal corridor shall be allocated to all operational Exchanges and this methodology would provide equal playing field to all operational Exchanges. The representative of the petitioner further submitted that the Commission in its order dated 30.4.2013 in Petition No. 180/2010 acknowledged that the short-term market design with respect to the transmission corridor allocation can be improved and the Commission directed the staff of the Commission to undertake study for various options available for equitable allocation of the transmission corridor.

8. The representative of the petitioner submitted that PXIL is not challenging the price discovery mechanism and it is requesting the Commission to address the issue of transmission corridor allocation only. He further submitted that the transmission corridor is a public resource and its allocation should be in line with the allocation of scarce resource. The representative of the petitioner submitted that the current methodology is discriminating the participants of the smaller Exchange.

9. Prof. Soman, IIT Mumbai gave a detailed presentation on the "**Allocation of corridors using max-min fairness criteria**" which is enclosed with the Record of

Proceedings. Prof. Soman, during his presentation, touched upon subjects such as Pareto optimality/efficiency, min-max and max-min fairness. He suggested that policy could be either of allocation of trades to achieve min-max fairness proportionate regret vector or allocation of trades to achieve max-min fairness.

10. Prof. Soman submitted that he has deliberately not allocated corridor as nobody is interested in corridor but in the payoffs. He further submitted that since corridors are known to NLDC, the Exchanges can submit unconstrained solution to NLDC which would run a central algorithm implementing fairness policy that is apriori decided and communicate to the Exchanges what trades for each one could be. Prof. Soman, while ending his presentation, submitted that he has modeled its solution based on linear programming and it does not take into consideration block bids in which multiple time blocks would get connected. He submitted that this solution can be improved using MILP framework and the solution suggested is not the end solution.

11. In response to the Commission's query whether if it is possible to have a model prepared which can run based on inputs from NLDC and the Power Exchanges, Professor replied in the affirmative.

12. In response to the Commission's further query as to how handicapped would it be to include KVL, Professor Soman submitted that incorporating KVL should not be a problem since load flow studies are done routinely and network model can be obtained with certain adequate assumptions. He further submitted that one may argue AC load flow is possible principally but in his opinion it is not desirable due to fairness and transparency issues and ease of understanding DC network flow. Prof. Soman submitted that in his opinion that some regret should also be shared by the smaller Exchange as the congestion is not solely due to the larger Exchange but also due to other allocation done by NLDC for bilateral, long term, medium term transactions, etc.

13. The representative of IEX submitted as under:

(a) According to Prof. Soman regret factor should be shared by the two exchanges equitably and min-max fairness criterion is related to cost allocation in which case regret factor is equal and max-min criterion is leading to regret factor more towards the larger exchange and zero towards the smaller Exchange.

(b) Max-min criterion is typically used for resource allocation alone in which no cost factor is involved like that in internet bandwidth allocation whereas min-max criterion is for cases where there is cost implication like on exchanges, participants and transmission system operator. Hence, mix-max criterion should be considered.

(c) The solution presented is for only 3% of the market whereas the solution should optimize AC network flows, scheduling of long term, bilateral transaction along with Exchange transactions. PJM allows each and every transaction to go through the load flow analysis and then only energy is scheduled.

(d) IEX got a study done along with IIT Kanpur (Prof. Anup Singh) on allocating transmission capacity to Exchange along with other short-term participants which was presented to the staff of the Commission.

(e) The presentation made by Prof. Soman had no relevance to the present petition.

(f) Depending on the context (whether short term, long term or exchange platform) participants of long term, medium, short term or Power Exchanges can be called public.

(g) Public good in the context of Power Exchanges would be participants of both the Exchanges together and then the yardstick to measure public good should be to maximize the collective good or social welfare.

(h) The proposed methodology in essence is allocating minimum 33% to each operational Exchange even when the smaller Exchange is serving 1-2% of volume and therefore they are having the right of first refusal.

(i) Prof Soman in his presentation submitted that it does not support any kind of allocation whereas the present petition is pertaining to allocation of transmission capacity.

(j) The representative of IEX questioned the theoretical basis and precedence of such a methodology in other parts of the world and submitted that such an allocation would lead to a shift to the smaller Exchange resulting in national resource being allocated for the purpose of private benefit.

(k) Maximization of social welfare should be considered for which results of both Exchanges can be brought to a common platform, matching can be run on that platform, allocation can be done based on some algorithm and the results can be redistributed to the Exchanges. Such a method requires multiple iteration, a super Exchange on top of the existing Exchanges and evaluation cannot be blind to prices since merit order should be achieved.

(l) Social welfare maximization on a common platform may have practical problems. However, it being the best solution is acceptable it. The practical problems would be of the nature of difference in bidding patterns such as step vs linear functions, cumulative quantity vs individual quantity. Bidding pattern harmonization would be a prerequisite for commencing matching on a common platform.

(m) As per the petitioner, allocation mechanism is similar to other public services but no references other than that of internet bandwidth allocation has been provided in the present petition. The internet bandwidth theory is as per max-min theory and not min-max theory.

(n) The role should not be limited to allocate express lane to the poor to support him and that markets being cruel do not differentiate between rich and poor. The markets are rather concerned about the working efficiency. The consumers prefer to go to a crowded shop and not a less crowded one.

(o) The basic issue in the present petition is that loss to one Exchange is more and loss to other Exchange is less.

(p) The representative of IEX sought permission of the Commission to allow it to make presentation during next hearing.

14. The Commission observed that distribution companies follow the methodology of max-min fairness and min-max fairness for allocation of resources & costs for different set of consumers respectively.

15. In response to the Commission's query as to whether it is fair if existing entities do not allow participants to enter the market, the representative of IEX submitted that it would reply the same during the next hearing. He further submitted that the public policy for national resource could be either allocation or any other methodology. He referred to 2G spectrum case and the presidential reference to the Hon'ble Supreme Court and submitted that the public good should be considered instead of interest of Exchanges and that auction or allocation policy is contextual. He further submitted that policy makers/regulators should provide guidance on allocation policy of national resource.

16. The Commission observed that the first right of refusal should be with participant quoting a higher price in an auction to which the representative of IEX agreed. The representative of IEX submitted that the Commission in its order has mandated staff of the Commission to review the methodology of allocation of corridor and to evaluate/analyze participation of Exchange or its participants in e-bidding process. He submitted that e-bidding would allocate transmission capacity in a fairer manner. He also submitted that e-bidding is a fairer method for allocating transmission corridor and believed that the Commission is on the same lines.

17. The representative of NLDC and IEX requested that the presentation made by Prof. Soman should be shared with them as well to which the Commission acquiesced.

18. Due to paucity of time, the representative of IEX could not conclude its arguments. The matter was adjourned for 19.6.2014.

By order of the Commission

Sd/-

(T. Rout)

Chief (Law)

Annexure-I & Annexure-II (Presentation and illustration by IIT Mumbai) is attached herewith.