**CENTRAL ELECTRICITY REGULATORY COMMISSION**
**NEW DELHI**

## Petition No. 180/2010

| | |
|---|---|
| Subject: | Petition for seeking permission to introduce revise pricing in case of congestion based on weighted average cost of Power in the sub-market. |
| Date of Hearing: | 28.2.2012 |
| Coram: | Dr. Pramod Deo, Chairperson<br>Shri S.Jayaraman, Member<br>Shri V.S.Verma, Member<br>Shri M.Deena Dayalan, Member |
| Petitioner: | Power Exchange of India Ltd. |
| Respondents: | Indian Energy Exchange<br>National Power Exchange<br>Power System Operation Corporation of India Ltd<br>Inter-State Trading Licensees |

Parties Present:

1) Shri P.K. Sarkar, PXIL
2) Shri M.L. Batra, PXIL
3) Shri Mohan Chahregiri, PXIL
4) Shri Nav Neeraj, PXIL
5) Shri Akhilesh Awasty, IEX
6) Shri Kaushik Dey, POSOCO (NLDC)
7) Shri S.C. Saxena, POSOCO
8) Shri S.K. Nair, GUVNL
9) Shri S.S. Barpanda, NLDC
10) Shri Gaurav Maheshwari, IEX
11) Shri Pramod Choudhary, MPPTCL
12) Shri Dilip Singh, MPPTCL
13) Shri M.G. Raoot, NPEX
14) Shri D.K. Gupta, NPEX
15) Shri Yatin Bhagchnaani, Shree Cement

## Record of Proceedings

The representative of the petitioner made a detailed presentation on the issues raised in the petition which has been filed under Regulation 32 (iv) of Central Electricity Regulatory Commission (Power Market) Regulations, 2010 (Power Market Regulations). He submitted that the methodology proposed in the petition does not change the methodologies for calculation of

Market Clearing Price (MCP) or Market Clearing Volume (MCV). The proposed methodology maintains the economic, locational and price signals in the market and only seeks to address the discrimination to the power exchange participants who pay the congestion charge. He submitted that Regulation 32(iv) of the Power Market Regulations allows the power exchanges to develop their own market splitting methodology with the approval of the Commission and Regulation 33(i) of Power Market Regulations provides that the power exchanges may be vested with congestion amounts arising from the difference in market prices of different regions as a consequence of market splitting. He submitted that the present petition is maintainable under both the provisions of Power Market Regulations.

2. The representative of the petitioner submitted that though the power exchange model and congestion management model in India have been adopted from Nordpool, the transmission conditions in India are different from that of Nordpool where the transmission corridor after meeting the requirement of long term contracts is available exclusively for power exchange transactions and as a result, congestion is not frequent. Moreover, the congestion fund at Nordpool is used to strengthen transmission corridor to relieve congestion. He suggested that the model in India needs to be suitably modified to suit Indian conditions.

3. The representative of the petitioner submitted that the proposed methodology shall adopt classical market splitting and arrive at prices in surplus and deficit regions. However, the Final Settlement Price (FSP) will be adjusted as under:

$$FSP = MCP + Charges \pm Congestion\ Rent.$$

The representative of the petitioner submitted that in respect of all buyers who are cleared in the deficit region and pay a higher price, their FSP will decrease and in respect of all sellers who are cleared in the surplus region and receive a lower price, their FSP will increase. The congestion charges would be distributed on a weighted average predetermined formula among the buyers and sellers. The congestion charge, which would have been created as per the previous methodology, is extinguished by evenly redistributing the congestion charges between buyers of the deficit region and sellers of the surplus region. Referring to the Commission's Staff Paper on power exchanges issued in July 2006, he submitted that the Commission had also considered this alternative in the Staff Paper. In reply to the query of the Commission as to how equitability among participants would be ensured under the proposed methodology, the representative of the petitioner submitted that the basic market splitting methodology and MCP (which is the energy price) are not being changed in any way. The proposed methodology would ensure adjustment in the final settlement price which in any case is different for different participants due to transmission charges, open access charges etc.

4. A copy of the presentation made by the petitioner before the Commission is attached as Annexure 1 to this ROP for information of all concerned.

5. The representative of the Indian Energy Exchange (IEX) submitted that Regulation 11(iii) of Power Market Regulations provides that "in case of congestion in transmission corridor, market splitting shall be adopted". Therefore, Market splitting methodology cannot be changed till this regulation is amended and therefore, the petition which in effect seeks to amend

the Power Market Regulations is not maintainable. Moreover, the congestion revenue is a transmission charge to secure the corridor by the participants and should not go back to the participants on the power exchange as proposed and should only go to the transmission asset owners only. The representative of IEX further submitted that the methodology suggested by the petitioner lacks transparency and is not equitable to a certain set of power exchange participants. The representative of IEX illustrated his point with the help of an example where different sellers are bidding at ₹4/unit, ₹3.9/unit and ₹3.8/unit respectively and the sell bid of ₹3.8/unit is selected being the lowest price. In such cases, the Final Settlement Price (FSP) is worked out by adding the congestion rent say, ₹0.20/unit to the selected bid ( ₹3.8/unit) and the effective price then becomes ₹3.80+ ₹0.2= ₹4.0/unit. This would be unfair to the other bidders who after bidding at ₹3.90/unit and ₹4/unit would not be selected. He submitted that while the proposed methodology seeks to address the question of equitable treatment to power exchange with other market participants in the short term market, it is creating discrimination among power exchange participants and will not be viable solution in the long run as the fundamental concept of transparency provided by the exchange will be lost. In a double sided close bid auction which is an elegant mechanism and adopted in India (leading to marginal bidding by both buyers and sellers at marginal utility and at marginal cost respectively), this will lead to speculative element in bidding as participants would attempt to guess the congestion rent. Transactions on the IEX produced 95 % of congestion revenue and therefore, IEX is equally concerned with the Petitioner's concerns regarding transmission congestion and inequitable treatment of Power Exchanges. He suggested that the issue should be discussed in a Public hearing, as it is intricately linked with the issue of corridor allocation among MTOA, STOA and Day Ahead market which needs to be addressed.

6. The representative of the petitioner in reply to the IEX's submission regarding speculative bidding submitted that it would be difficult for any power exchange participant to forecast congestion charge. He further submitted that the FSP calculation formula would be transparently known to all the participants and hence, market behaviour would adjust to it and find its equilibrium. He submitted that the fear of speculation and lack of transparency is unfounded. The representative of the petitioner also submitted that though long term solution can be worked out, there is a need to address the issue at hand.

7. The representative of National Load Despatch Centre (NLDC) submitted that locational price signals would be lost if the proposed methodology of the petitioner is accepted and implemented. Concurring with the illustration of IEX, he submitted that the proposed methodology would be unfair to certain categories of participants on the power exchange. He submitted that it would also impact the bidding behaviour, leading to speculative bidding.

8. The representative of National Power Exchange (NPEX) submitted that Indian market is an evolving market whereas in other developed markets, transmission congestion is handled through Financial Transmission Rights (FTR). Till such mechanism is adopted in the Indian context, the congestion amount may be used to reduce the transmission charges for the participants cleared on PX. In specific rebuttal to the proposed methodology, he submitted that the sanctity of the MCP would be lost as the congestion charges would be given back post the price discovery.

9. The representative of Madhya Pradesh Power Trading Corporation Ltd. (MPPTCL) submitted that it needs some more time to respond as it has received the petition late. He further submitted that the proposed methodology cannot be introduced without amending the regulations.

10. The Commission directed the respondents and any other interested person to file their responses by 15.4.2012. Subject to the above, order in the petition was reserved.

By order of the Commission

Sd/-
(T. Rout)
Joint Chief (Law)

PXIL
Transforming Power Markets

# Revised Pricing in case of Market Splitting…

# Petition No. 180/2010

**CERC**
**28 February 2012**

# Introduction

- *Power Market Regulations, 2010, Section 32 (iv)*

  *The Power Exchanges shall carry out Congestion Management using Market Splitting mechanism in Day Ahead market. The Power Exchange can develop its own Market Splitting Methodology with approval of the Commission.*

- PXIL had submitted Petition 180/2010 in line with above section to develop its own methodology

- Proposed method
  - Does not change the MCP or MCV calculation methodology
  - Maintains the economic locational price signals
  - Removes the discrimination (only exchange participants in short-term bilateral market)
  - Unfair imposition to participants of power exchange (compare to toll charged on highway)

# Maintainability

- ***Power Markets Regulation, 2010, Section 33 (i)***

  ***Power Exchange Congestion Amount management***

  *The Power Exchange **may be** vested with Congestion Amounts arising from the difference in market prices of different regions as a consequence of market splitting.*

  *The Congestion Amount shall be maintained in a separate account by the Power Exchange to be transferred on the next working day to a regulatory fund as may be directed by the Commission.*

  *Provided that until the time the aforesaid fund is created congestion amount shall be transferred to National Load Despatch Centre account and once such a fund is created the NLDC shall transfer the congestion amount in favour of such fund.*

# Maintainability

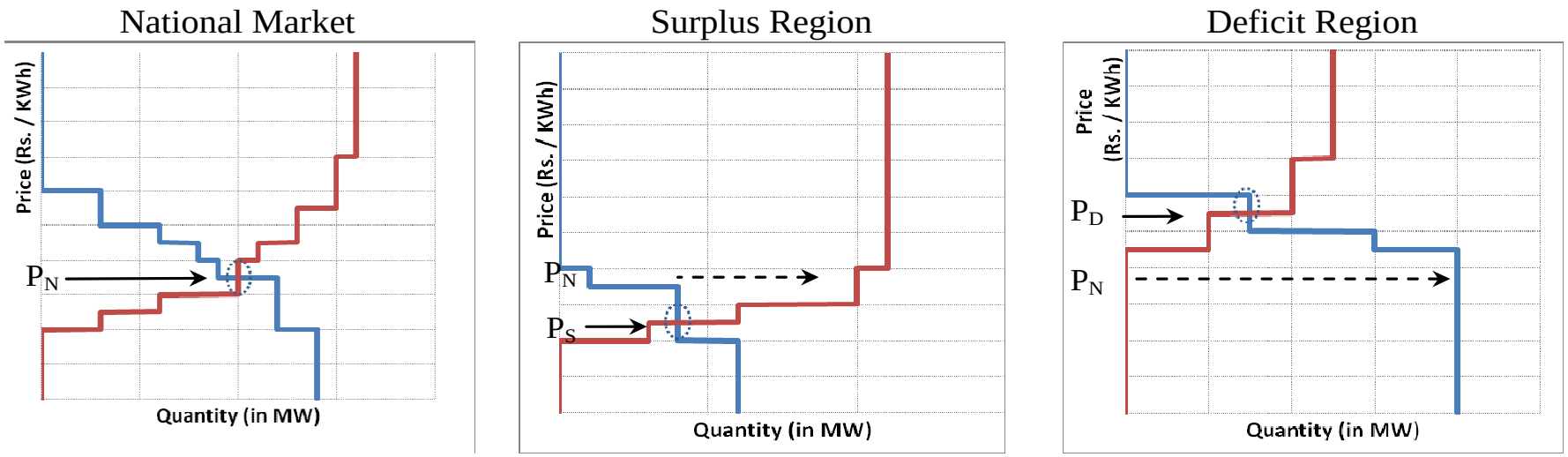
- Above section is to be treated as a direction only if the power exchanges get vested with any congestion rents

- It cannot be held to mean that Congestion rents have to be necessarily extracted

  *Exchanges may choose a congestion management methodology. It may not necessarily result in a congestion rent being generated but still retain the economic principles and equitable treatment for all participants*

**The petition is therefore maintainable under the provisions of both Section 32(iv) and 33(i)**

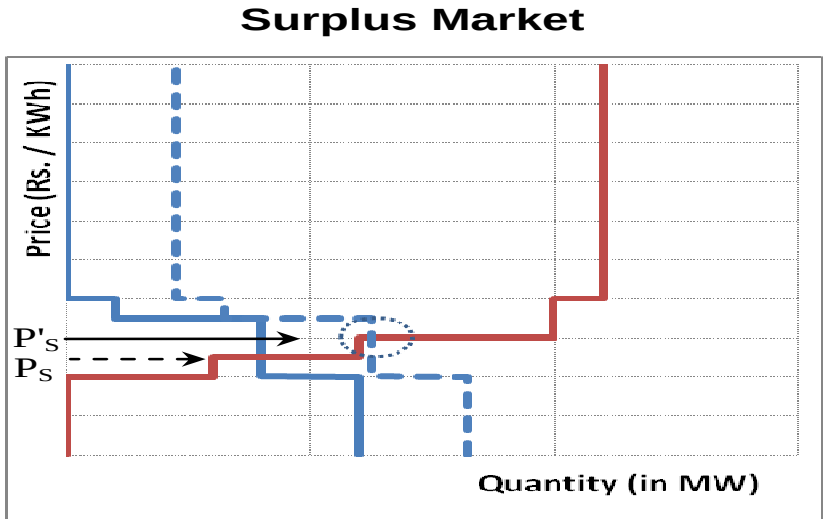
# Market Splitting on Exchanges

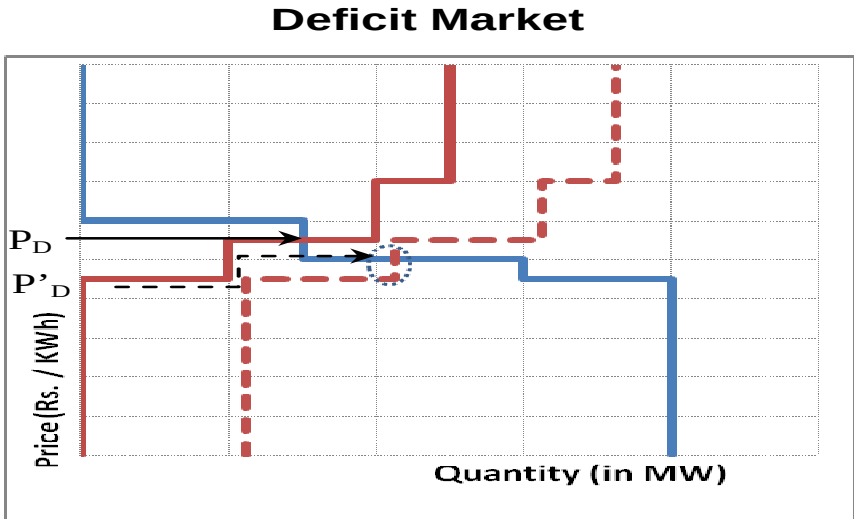



- Congested zone is separated from the rest of the market (Called "splitting")
- Orders in the zones are taken separately and the price calculation done for each separately.
- MCP in the surplus region (denoted by $P_S$) being lower than $P_N$ indicates that extra sale capacity is available at $P_N$ and therefore it is a surplus market.
- MCP in the deficit region (denoted by $P_D$) being higher than the $P_N$ indicates that extra demand is available at $P_N$ and therefore it is deficit market.

# Market Splitting on Exchanges

- Available capacity is added as a demand in the surplus market and as supply in the deficit market.
- Available transmission capacity between the two markets is used such that electricity flow takes place from the surplus market to the deficit market.
- Isolated market prices will now be at the intersection of the sale curve and displaced purchase curve in surplus market viz. $P'_S$ and at the intersection of the displaced sale curve and the purchase curve in the deficit market viz. $P'_D$.



# Market Splitting on Exchanges

- Market prices in both the deficit as well as the surplus markets are evened out as much as possible and the transmission capacity is utilized

- $(P'_D - P'_S)$ multiplied by the total electricity transfer carried out over the congested corridor, is the total congestion revenue.

- This Congestion revenue is sent to the National Load Despatch Centre (NLDC), who collect it in a Congestion Fund, to be used for purposes as defined by the CERC

# Congestion Management & Market Splitting

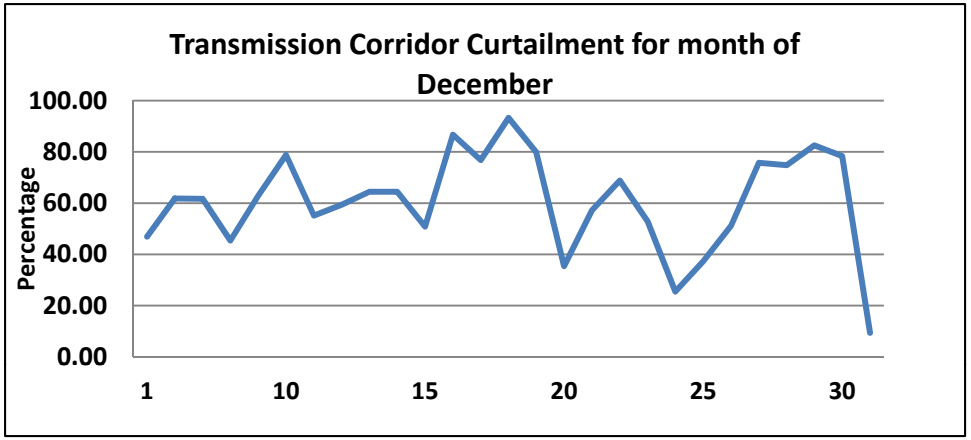
- **Transmission corridors allocation priority**
  - long-term users
  - medium term users
  - short-term users
  - **only residual corridor capacity available to Power Exchanges**
- **No corridor capacity allocation cost for other STOA transactions**
  - Congestion signalled by quantitative restrictions only
- **Power Exchanges manage congestion by splitting markets**
  - Congested zone(s) separated from rest of the market
  - MCP derived separately for congested zone(s) resulting in price differentials
  - Congestion rent extracted from the buyers in the deficit market and passed on as a regulated fund

**Congestion on Power Exchanges is almost a DAILY phenomenon resulting in higher price of electricity for consumers**

# Disappearing Volumes

| Volume curtailed on PXs for last 6 months | | |
|---|---|---|
| | PXIL (in MUs) | IEX (in MUs) |
| May | 10.45 | 27.97 |
| June | 8.46 | 27.13 |
| July | 12.56 | 44.54 |
| August | 14.19 | 39.58 |
| September | 3 | 14.42 |
| October | 10.25 | 66.65 |

CERC MMC Reports




- Exchange participants exposed to higher price risk as well as quantity risk
- Erratic participation and low volume erodes confidence and leads to further deterioration in price discovery
- Low confidence of close to real-time market benchmark prices
- Significant price divergence in short term markets
- Skewed approach results in a miniscule proportion of consumers bearing the burden as transactions through power exchanges pay congestion rent

**The Vicious Spiral – Stagnant Market, Low Retail Participation, Distorted Pricing, Disproportional Burden, Loss of Confidence, Low Liquidity**

# Utilization of Congestion fund

- **Congestion rent sent to NLDC to be used under guidance from CERC**
  - Planning and implementation of new transmission assets is outside the purview of both CERC & NLDC
  - Congestion rent is abnormally high for the users of the power exchanges
  - Yet grossly inadequate to create transmission assets to relieve congestion

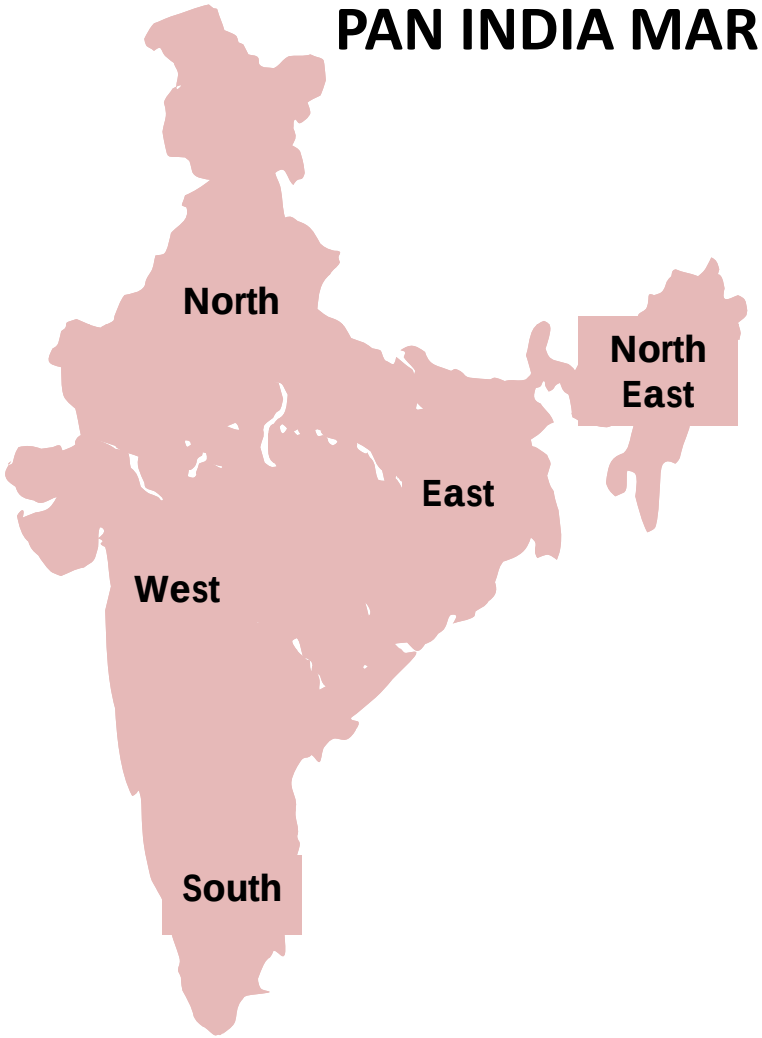
- **CERC's Staff Paper on power exchanges issued in July 2006 had laid down an alternative**
  - Mentioned that in the absence of elaborate guidelines for utilisation of congestion rent for building of additional transmission capacity, *it is best to avoid collection of the congestion rent as such*

- **CERC, through the PMR has provided for the following**
  - *Regulation 32 (iv) The Power Exchanges shall carry out Congestion Management using Market Splitting mechanism in Day Ahead market. The Power Exchange can develop its own Market Splitting Methodology with approval of the Commission.*

## PXIL's Proposed Methodology Step 1

# No Change in UMCP and UMCV Determination

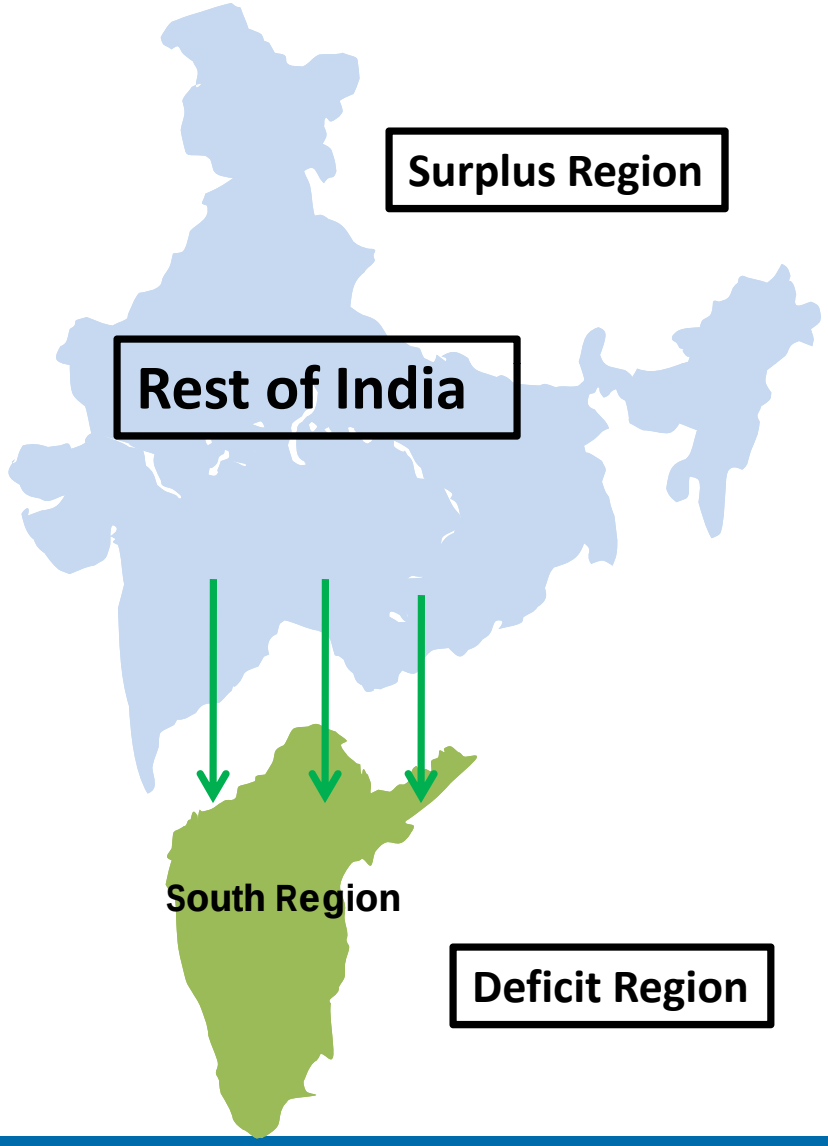
- Unconstrained Market Clearing Price (UMCP) & Unconstrained Market Clearing Volume (UMCV) is calculated for the entire country as one market
- Orders are cleared on the basis of the discovered UMCP and UMCV
- Cleared quantities are converted into flows across various regions (as shown in the figure)
- These flows are sent to NLDC for determining the transmission corridor allocation



## PXIL's Proposed Methodology Step 2

# No Change in Applying Flow Constraints

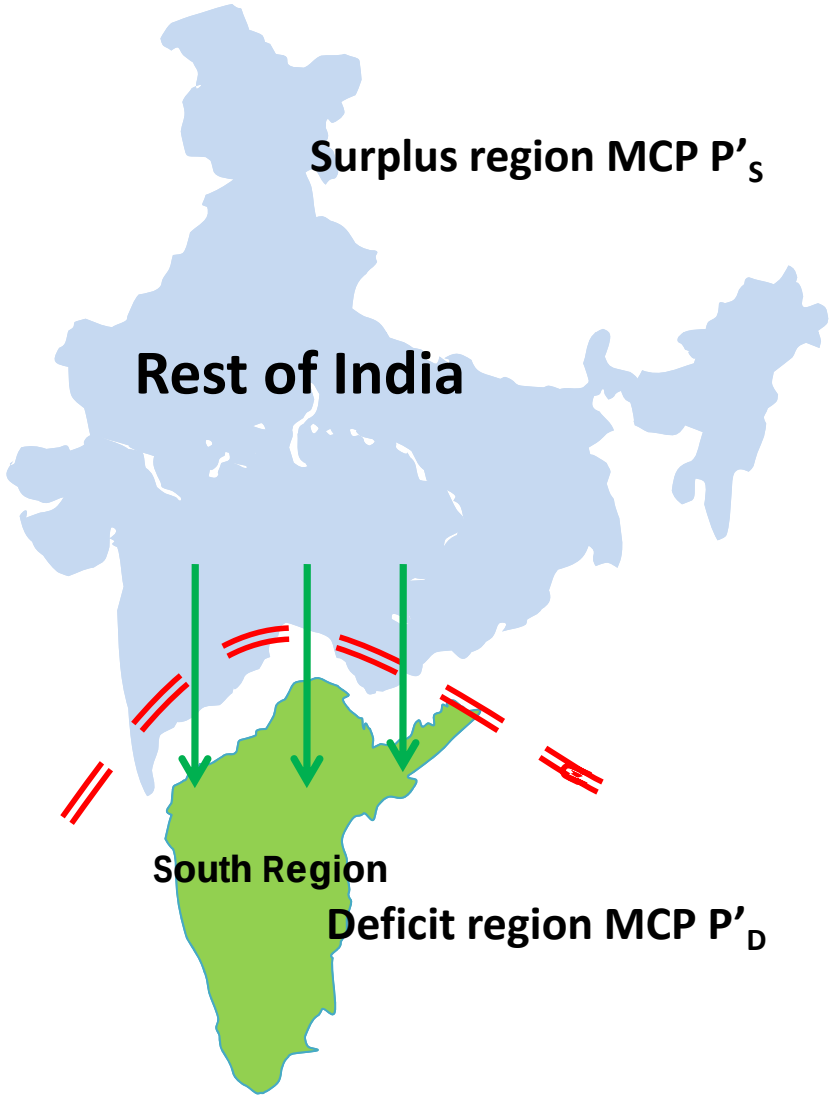
- NLDC provides both the exchanges about the transmission capacity available to each
- Power Exchanges compare the flows with the allocated capacity
- If flow to a region is constrained due to insufficient capacity that region is split out according to standard market splitting methodology



## PXIL's Proposed Methodology Step 3

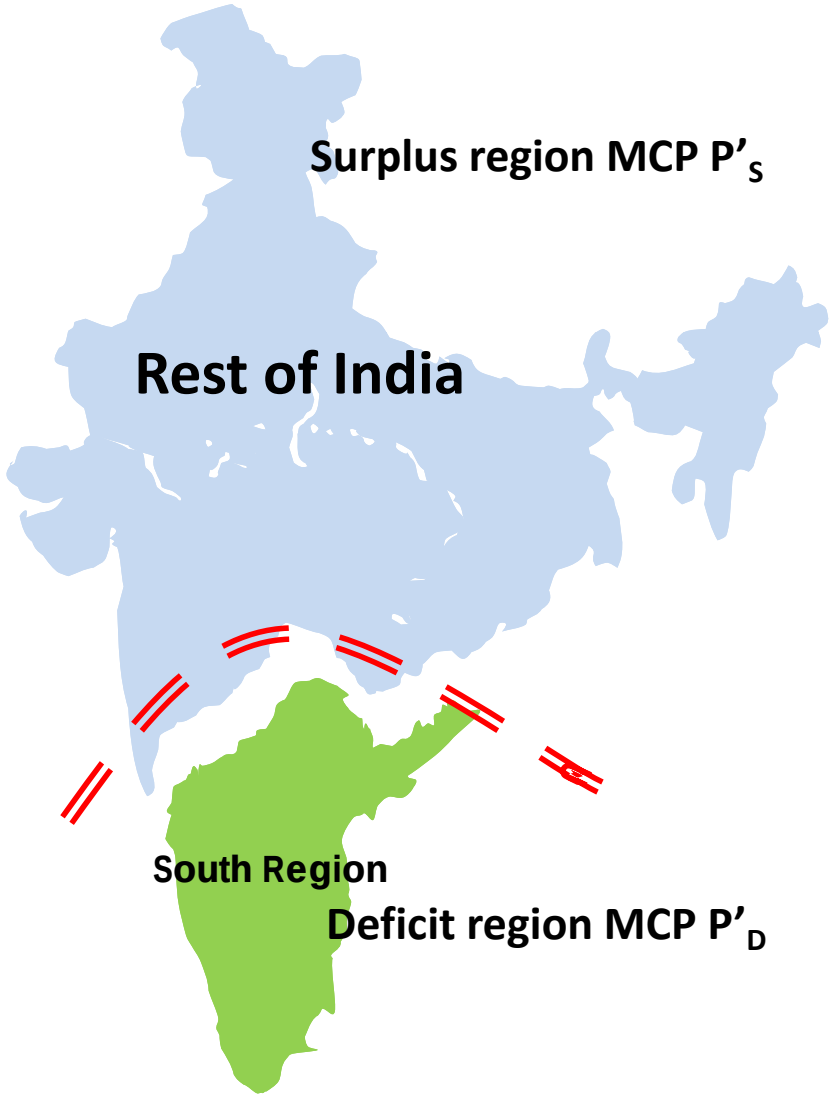
# No Change in MCP and MCV Determination

- Bids and Offers are separated for each region and MCP is calculated for each separately
- MCP in the surplus region ($P'_S$) and MCP in the deficit region ($P'_D$) are calculated on the basis of standard market splitting methodology
- Orders in the surplus region are cleared on the basis of $P'_S$
- Orders in the deficit region are cleared on the basis of $P'_D$



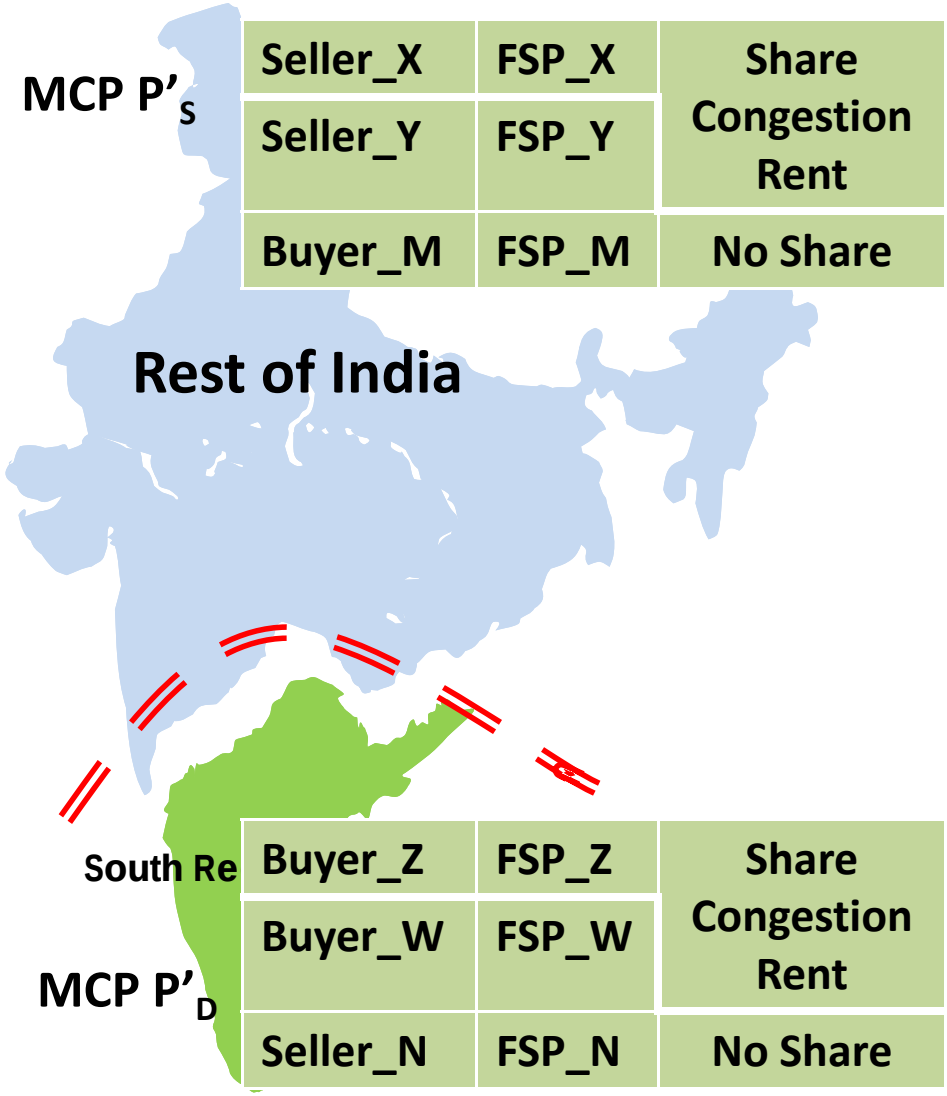
# PXIL's Proposed Methodology – MCP and MCV Sacrosanct

- Market Splits have been finalized
- Market Clearing Prices (MCP) for Surplus and Deficit regions have been finalized
- All such entities who get matched and cleared are indentified
- **At this stage, the Proposed Methodology is initiated**



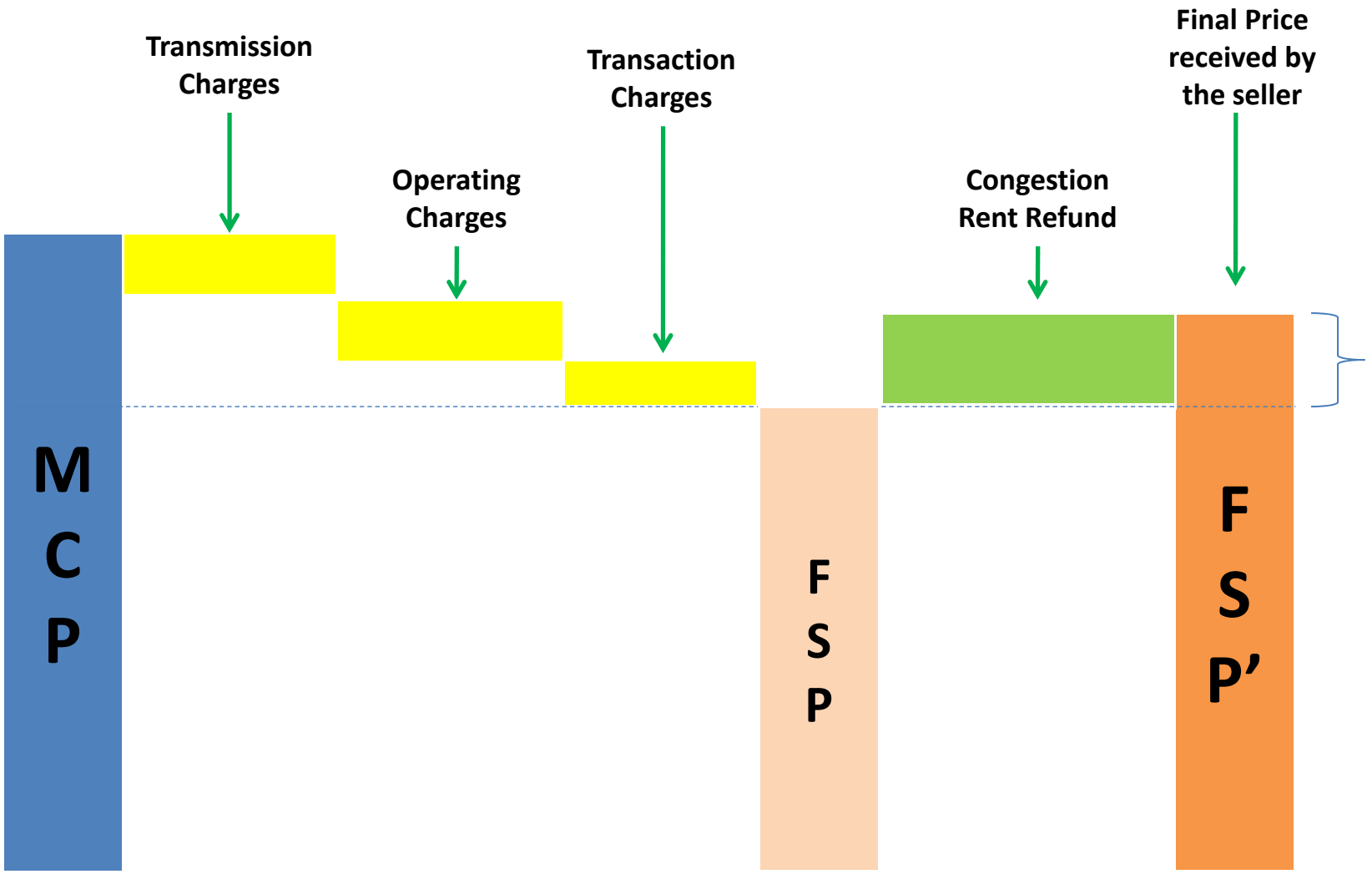
# Final Settlement Price = MCP + Charges +/- Congestion Rent

- In the settlement price calculation, an additional charge is calculated
  - for buyers in deficit market and
  - sellers in surplus market
  - according to weighted average of the volumes cleared
- Final Settlement Prices (FSP) are then derived by combining MCP, transmission charges, application and scheduling fees, transaction fees, etc.
- The congestion rent, which would have been created previously, is extinguished by evenly redistributing the financial burden between buyers of the deficit market and sellers of the surplus market



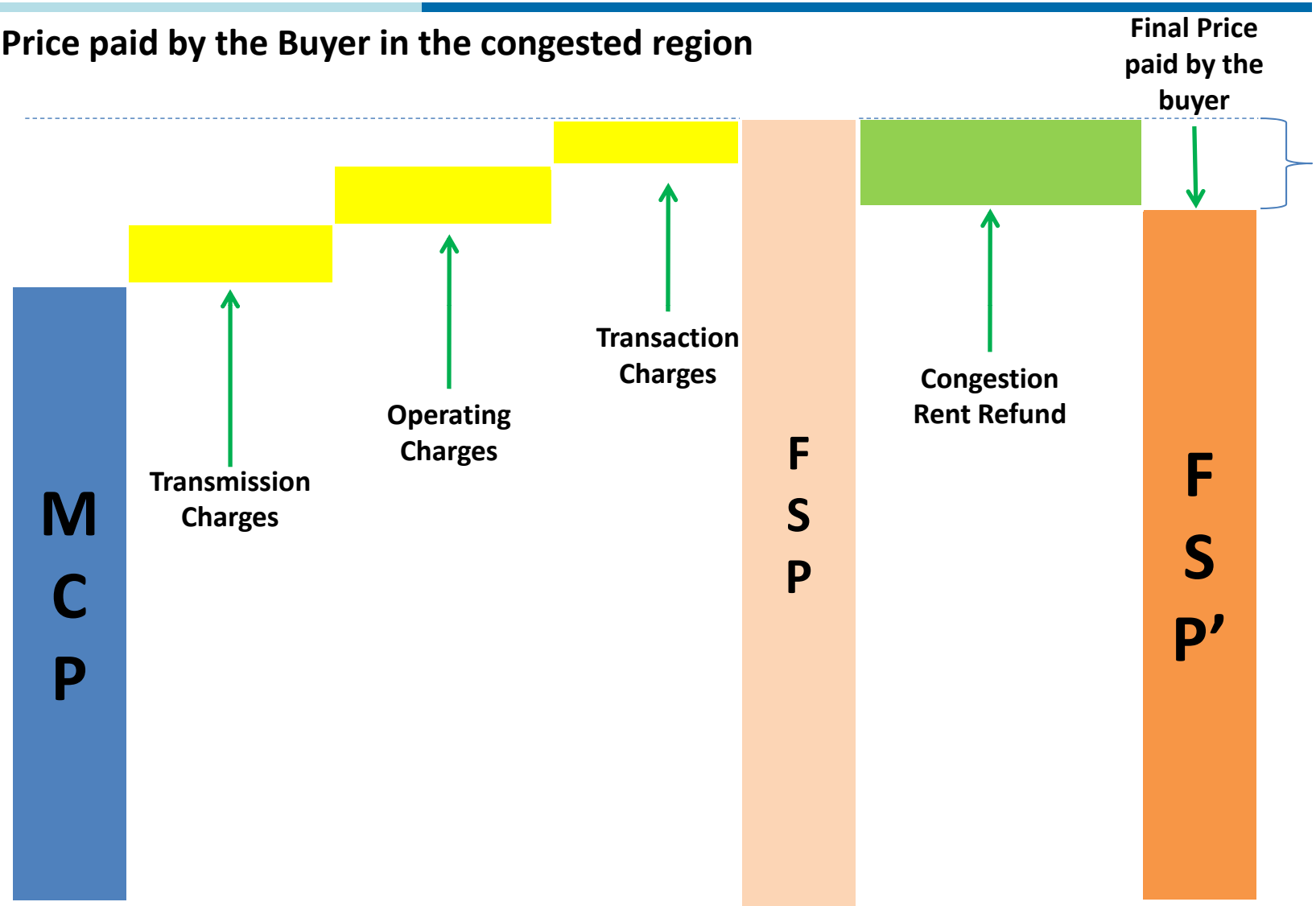
# Final Settlement Price - Seller

## Price paid to the Seller in the surplus region



# Final Settlement Price - Buyer

**Price paid by the Buyer in the congested region**



# Salient features of Proposed Methodology

- **Retains multi-market model**
- **No change to classical market splitting approach**
- **Continues to provide location signals for planning**
  - MCP calculated will remain sacrosanct
  - Entities cleared at the MCP continue to remain so
  - Retains the economic signals and benefits all buyers and sellers across the country uniformly
- **Is non-partisan and non-discriminatory to all participants**

# Advantages of Proposed Methodology

- Will lead to a level playing field between bilateral markets and power exchanges by removing the extra burden of congestion rent for Exchange participants
- Reduce erratic bidding and therefore, reduce inefficiencies in price discovery
- Remove injustice of economic rent extracted from a miniscule and fledging national level market in its infancy
- Will remove the hindrance to growth of National Electricity market

**The proposed methodology has been discussed with and validated by several eminent economists in the country**

# FREQUENTLY ASKED QUESTIONS

# Respondents

- The following have submitted a written response to PXIL:
  - **GMR**
  - **GUVNL**
  - **Shree Cements**
  - **PCKL**
  - **APCPDCL**
  - **NPEX**
  - **IEX**
  - **POSOCO**

**FAQs attempts to respond to some commonly raised concerns by the above respondents**

# Some Concerns Answered

## Will it disturb the Standard Market Splitting methodology? (IEX, POSOCO)

- **Splitting mechanism will remain unchanged**
  - Proposed methodology will only become functional after matching algorithm of exchanges is complete
  - Therefore, process of calculating Market Clearing Price (MCP) after splitting remains unchanged
  - Process of clearing of orders of participants also remains unchanged
  - Final Settlement Price (FSP) calculated is a combination of the MCP and the applicable charges like transmission charges , exchange transaction charges or levies, etc.
- **Proposed methodology is a post standard market splitting procedure, therefore it does not disturb standard market splitting methodology**

# Some Concerns Answered

## Will the methodology disturb the set of buyers and sellers whose orders are cleared? (POSOCO, IEX)

- **Quantities are cleared as per MCP & MCV only**
  - Buyers quoting price higher or equal to MCP and sellers quoting price lower or equal to MCP are cleared
  - Entire set of buyers and sellers are cleared at MCP of their respective bid areas
  - The set of buyers and sellers is frozen once they have been cleared according to MCP & MCV
  - Final Settlement Price (FSP) is calculated for this frozen set of buyers and sellers which is a combination of the MCP and charges related to transmission charges and losses, application and scheduling fees, transaction charges, etc.

- **MCP &MCV calculations remain intact. MCP & MCV remain the sole criteria for clearing orders, therefore, set of buyers and sellers whose orders are cleared will not change due to the proposed methodology**

# Some Concerns Answered

## Will it keep providing the locational price signal for Congestion? (POSOCO, NPEX, IEX)

- **Locational congestion signals are provided by the Market Clearing Prices(MCPs)**
  - As no change is being made to the price calculation and market splitting methodology therefore the locational price signals will remain intact
  - In fact, it will lead to a level playing field between bilateral markets and power exchanges by removing the extra burden of congestion rent for Exchange participants and putting an end to shifting of exchange participants to bilateral markets
- **Proposed methodology will further deepen National Market and provide much stronger and relevant dependable locational price signals**

# Some Concerns Answered

- **Participants will be motivated to bid at higher rate as they expect some amount would be paid back. (POSOCO, PCKL, IEX)**

- The level and duration of congestion in any corridor cannot be predicted effectively.
- The quanta of congestion rent refund cannot be foreseen, thus entities cannot base their bidding strategy on such expectation.
- Moreover, bidding behavior is dynamic and dependent on market design and prevailing conditions.
- Markets will find their own equilibrium with symmetric information.

# Some Concerns Answered

- **The proposed methodology does not draw reference or not supported by practices across global power markets. (NPEX, POSOCO)**

- Regulators have recognised that structure of Indian Power Markets is unique, cannot force-fit solutions from other markets.
  - Compounded by concurrent list
  - Exchanges have no role in Transmission and System Operation
  - Supply deficit market
  - Chronic congestion – inadequate transmission

# Some Concerns Answered

- **This methodology will result in price differential for upstream and downstream participants and also rejection of bids. (POSOCO, NPEX)**

- The process of matching and clearing the orders have been kept completely unaltered.
- The locational prices continue unaltered and therefore the price difference between the areas too continue as before.

# Rejoinders

| Sl no | Prayer | Rejoinder |
|---|---|---|
| 1 | To distribute the Congestion Revenue among both the buyers and sellers in the surplus region and the buyers and sellers in the deficit region. | We agree with respondent's point of view. |
| 2 | To arrange meetings of stakeholders and make presentations to explain the methodology and to provide impact on different stakeholders. | We agree with respondent's point of view.<br>The methodology would be explained in detail through various seminars and conferences and complete transparency would be ensured |
| 3 | That the petitioner may not be given financial assistance for developing new software. It is the responsibility of the power exchange to develop and modify its software for which it is not required to have financial assistance from outside agencies. | The development of the software to handle the new congestion management system is towards benefit of all market participants without any specific incremental benefit to the exchange. It is therefore a cost in the national interest without a commensurate benefit. We therefore request the Hon'ble Commission to ignore the comments of the respondent in this regard and grant financial assistance to the petitioner for this development |

| Sl No | Comments | Rejoinder |
|---|---|---|
| 1 | The congestion rent that is collected as on date is a minuscule percentage of the overall power market and this appears to be unjust and unfair as small portion of the market is apparently bearing the burden of the congestion rent | We agree with the respondent's comment |
| 2 | There is a lack of clear and transparent plans for the usage of the funds that are being collected and that has led to a paralysis for addressing chronic congestion events. | The respondent's comment is not connected to the prayers in the petition. |
| 3 | APCPDCL is of the views that funds collected from SR region should be spent only in that region, otherwise it would be difficult to ascertain the proper application of funds in a holistic manner | The respondent's comment is not connected to the prayers in the petition. |
| 4 | That current methodology based on Nordpool is not suitable for Indian context as India is power deficit and that such methodology will create issues in the longer period | We agree that the Indian power market needs to be developed keeping in view the nuances and realities in India |

| Sl No | Prayer/Submissions | Rejoinder |
|---|---|---|
| 1 | It is humbly submitted that in the interim that systemic deficiency relating to congestion is being addressed, Congestion rent should be reallocated as per proposed methodology in order to provide relief to the market participants from Congestion rent being collected. | We agree with the respondent's comments |
| 2 | To order substitution of the proposal of the Petitioner by the alternative/ additional proposals and approve the same for implementation uniformly by all power exchanges. | No proposal, other than what has been made by the Petitioner, has been made by the Respondent |

# GUVNL

| Sl no | Comments | Rejoinder |
|---|---|---|
| 1 | GUVNL believes that the present congestion management regime in long run affects investments decision of new generators and consumers along with progressive loss of confidence of the participants in power exchanges. | We agree with Respondent's comment. |
| 2 | That the proposed methodology of PXIL will give correct signal for investments planning and for development of power market as against the present congestion management mechanism where market participants are discontent and PSDF is lying idle with continued problem of transmission congestion and generation bottleneck | We agree with Respondent's comment. |

| Sl no | Prayers | Rejoinder |
|---|---|---|
| 1 | To refund the funds accumulated under PSDF to the utilities by applying Weighted Average Price of two markets method from retrospective effect and to give a breather to the cash starved Buyers & Sellers State Utilities/ Distribution Companies who are otherwise defaulting on making payments of even salary to their employees and suppliers for the inputs as their financial position is precarious. | The respondent's comment is not connected to the prayers in the petition. |
| 2 | To bring a permanent solution to the Network Congestion / Transmission Constraints and to avoid bottleneck of generation. | The respondent's comment is not connected to the prayers in the petition. |
| 3 | To approve the alternative - 2 of new market splitting method . | We agree with respondent's comment. |

| Sl No | Comments | Rejoinder |
|---|---|---|
| 1 | The details of the exchange market transaction in the southern region confirms that open access customers in S2 region are found to be bidding aggressively and with the proposed methodology they will be motivated to bid at higher rate as they expect some amount would be paid back. | The level and duration of congestion in any corridor is effectively unpredictable, therefore the quanta of congestion rent refund cannot be foreseen, thus entities cannot base their bidding strategy on such expectation.<br>Bidding behavior is dynamic and dependent on market design and prevailing conditions . Markets will find their own equilibrium if information is public |
| 2 | Due to aggressive participation participants who can not bid at higher rate and does not succeed may get discouraged to participate in the market and that only creamy buyers will succeed. | The market design related to exchange operations gives priority to order price while clearing orders |
| 3 | PCKL opines that the issue to eliminating bottlenecks in the inter bid area congestion needs to be immediately addressed as well as the equitable allocation of transmission capacity in respect of exchanges transaction to be considered on priority as the existing transmission constraints defeats the objectives of Sec 66 of the Electricity Act, 2003 | We completely agree with this point of view and believe that the process of planning for transmission capacity should take into account the locational signals from the PXs |

| Sl No | Prayer/Submissions | Rejoinder |
|---|---|---|
| 1 | To utilize the Congestion revenue accumulated in the congestion fund with NLDC for construction of transmission capacity across congested corridors. | The respondent's comment is not connected to the prayers in the petition. |
| 2 | To expedite the transmission projects which will ease the congestion. | The respondent's comment is not connected to the prayers in the petition. |
| 3 | Proportional capacity in transmission capacity that is constructed by utilizing the congestion fund collected through the exchanges be allocated to the exchange transactions (***as only the participants of the exchange are paying opportunity cost of congestion although they are hardly 2% of the entire power market***). This will benefit the exchange participants in congested area which in turn will promote the development of the power market | The respondent's comment is not connected to the prayers in the petition.<br><br>However, we agree to the respondent's comments and urge the Hon'ble Commission to view them positively.**(Fairness Principle)** |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 1 | IEX has different views on the said issue needs to be addressed. IEX also feels that the proposed methodology of returning back congestion revenue to the participants would be worse than the problem itself. | Statement not supported by any facts. |
| 2 | IEX feels that due to ploughing back of congestion revenue will create an issue on transparency and price signals emerging out of the markets. | Statement not supported by any facts. |
| 3 | IEX has objected on the statement that the congestion revenue so generated because of congestion to be ploughed back because it would result in post facto adjustment of the prices derived and this adjustment would result in a situation where a participant who was ready to pay more got excluded as compared to a successful participant who has effectively paid. | Since the market clearing prices are not being touched in the said methodology, therefore, such an eventuality would not occur |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 4 | The major issues that will arise due to congestion revenue are :-<br>a. compromise with transparency of the market which should be avoided at all cost;<br>b. participants will tend to bid more aggressively as they expect some amount to be paid back and thus result in increase in prices;<br>c. price signals emanating from such arrangements would be distorted;<br>d. funds that are available for investments in the congested corridor would not be available. | a. The mechanism is completely transparent and would be known to all participants<br>b. Since the expected timing and quantity of congestion cannot be predicted, therefore, it would not be possible for entities to plan for the refund value. In addition, since the entire mechanism would be transparently known to all participants, any change in bidding strategies would be done by all parties in a similar manner<br>c. The entire price discovery mechanism even post-congestion is kept undisturbed. Additionally, Price Signals are equilibrium outcome of Market Design, Market Conditions and Market participants strategies. Price Signals are dynamic in nature and they cannot be distorted by public information as all participants are free to update their strategies and markets will find new equilibrium<br>d. The development of transmission corridors is not contingent upon the availability of congestion funds only. The transmission development is planned for and managed by separate entities who have separate sources of funds for such development |
| 5 | The petitioner (PXIL) has mentioned that for better co-relation between price signal and congestion there is need to have increased number of zones. In this the respondent (IEX) mentioned that the number of zones needs to be defined and that will depend on probability of congestion within a zone. | Should be considered as a part of market design approach |

| Sl no | Prayers | Rejoinder |
|---|---|---|
| 1 | To dismiss the proposed methodology in the petition for plowing back congestion revenue. | The prayer of the respondent does not have any valid ground and may be summarily rejected |
| 2 | Entire transmission capacity after allocation to long term customers should be utilized in the day ahead market and left over if any could be utilized by the bilateral contracts. This will be in line with the international practices for making market more transparent<br><br>**Alternatively**, after allocation to long term customers, entire transmission capacity may be put on day ahead auction in a separate market which can be named as "Day Ahead Transmission capacity market". Exchange as well as participants in the bilateral deals can participate in such a segment and buy out the transmission capacity.<br><br>Amount paid by the exchange for such transmission capacity can be apportioned by the exchange on the participants on that date through a suitable mechanism. Funds generated through auction would be legitimately belonging to the owners of the transmission capacity who can utilize it for removing congestion under regulatory supervision. | The prayer of the respondent is extremely antithetical to the proper development of the marketplace.<br>The respondent imagines marketplaces (viz. the power exchanges) to also act like market participants.<br>The entire structure of an implicit auction for congestion management is defeated if added with an explicit auction as well.<br>Respondent has not provided any basis why this is a suitable method. Exchanges are neutral entities and should not participate in any kind of market themselves.<br>Market design proposed by the respondent is not different from current methodology |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 1 | The method proposed by the petitioner does not find any mention among the different methods of congestion management described by the petitioner. As such, the proposal is not backed by any reference in the global context. | As has been mentioned by the petitioner, since the structure of the market is unique to India, therefore trying to force-fit solutions derived from some other markets would not be beneficial. |
| 2 | The Respondent is of the view that analysis of correlation between bidding behavior and the prices and /or congestion would require much more extensive and an independent study before reaching any conclusions | PXIL has developed the petition after having undertaken extensive studies. |
| 3 | NPEX is of the view that market splitting is a market based method for capacity allocation in DAS, whereas re-dispatch or counter trade are congestion alleviation methods in real time. | Statement of fact, needs no rebuttal |

| Sl No | Comments | Rejoinder |
|---|---|---|
| 4 | NPEX is of the view that the Nordic system is much more complicated with large number/types of financial contracts | The fundamental structure of the Indian spot market has been derived from the Nordic spot market without taking into consideration several key facets of their structure, viz. usage of inter-regional transmission being completely with exchanges etc.<br>Only to the extent of these larger differences, which render the congestion management by market splitting being used in India as completely ineffective, we agree with the respondent's statement |
| 5 | The proposed methodology differentiates settlement price for certain market participants in different from the actual area clearing price. | As has been detailed in the petition, the market clearing price is the price of energy which is obtained at the intersection of the aggregated demand and supply curves. However, for the purpose of settlement, entities have to additionally pay / be paid several other charges including transmission, application etc. the final value of the transaction is called the settlement price, ***which incidentally is different from one user to another*** |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 7 | In all the examples ,the petitioner has assumed the sub-market either as 'surplus' or 'deficit' i.e. having either 'out flow' or 'in flow' only . No example has been considered where any sub-area has an inflow of A MW on one side as well as out flow of B MW to other Zones. The formula /methodology proposed by the petitioner cannot be applied directly to such cases. | The petition contains a generic formula which can be applied to any case. The respondent may use the same to satisfy itself |
| 8 | Settlement price being different from clearing process, there will be far more "paradoxically rejected bids", not only for block bids, but also for single-interval bids. This aspect may be difficult to explain to the affected participants. | There is no change in the process of matching and order clearing. Therefore there is no possibility of any higher instances of paradoxically rejected bids. The Respondent's understanding of the methodology appears incomplete |
| 9 | There would be multiple settlement prices for each area and the real 'locational signal' may be lost. In other words, there will be 'multiple price discovery' leading to confusing price signals. | The "locational signal" is given by the Market Clearing Prices, the process of obtaining which remain unaltered. |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 10 | As an alternative /additional proposal for socializing the congestion revenue, the respondent proposes that the surplus may be utilized in the following order:<br>1. Congestion amount may be used first for compensating the PX for loss of transaction fee due to congestion.<br>2. It should be utilized next for offsetting the POC charges at a uniform rate for all the cleared PX participants. This rate can be calculated by dividing the congestion revenue by total volume cleared for the respective contract interval.<br>3. Balance amount, If any, can continue to be deposited as being done at present.<br>This method will avoid any alteration to clearing prices and thereby prevent speculative bidding . Most importantly, it is very simple and straight-forward to implement. | The respondent's comments do not provide any relief to the users of the exchanges and serve to only prolong the process of congestion rent extraction which by itself is unfair.<br>1. The prayer's made by the Respondent appear counter-intuitive and runs against the grain of their own arguments.<br>2. The POC charges are charges for the usage of transmission lines and they should be principally kept separate from the congestion rent, which is akin to an allocation charge. |
| 11 | Lastly, All power exchanges are required to follow common methodology for unconstraint price discovery. Likewise, all power exchanges should use a common methodology for market splitting and area price determination to maintain a level playing field for power exchanges and the participants. | Regulation 32(iv) allow the power exchanges to devise their own market splitting methodology. |

| Sl no | Prayers | Rejoinder |
|---|---|---|
| 1 | Order Substitution of the proposal of the petitioner by the alternative/ additional proposals and approve the same for implementation uniformity by all power exchanges. | The Respondent's submissions have been sequentially disproved by the petitioner. Therefore, we would request the Hon'ble Commission to turn down the Respondent's prayers |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 1 | The Respondent objects that the buyer entities in the downstream area whose bids are priced higher than the weighted average price of the two sub markets and the Seller entities in the upstream area whose bids are priced lower than the weighted average price of the two sub markets would not be cleared. | The process of matching and clearing the orders have been kept completely unaltered. In view of this, the respondent's comment is invalid |
| 2 | It also objected that the proposed methodology may also lead to change in the bidding behaviour of the Market participants and may lead to market manipulation. | Since the expected timing and quantity of congestion cannot be predicted, therefore, it would not be possible for entities to manipulate the market. In addition, since the entire mechanism would be transparently known to all participants, any change in bidding strategies would be done by all parties in a similar manner<br>Bidding behavior is dynamic and dependent on market design and prevailing conditions . Markets will find their own equilibrium if information is public |
| 3 | There is no price differential between upstream and downstream area as weighted price of the two or more sub markets is taken. The location price also gets distorted in the methodology. | The locational prices continue unaltered and therefore the price difference between the areas too continue as before. In view of this, the respondent's comment is invalid. |

| Sl no | Comments | Rejoinder |
|---|---|---|
| 4 | Regulation 33(i) of the PMR, 2010 provides for market splitting mechanism used for congestion management by the Power Exchange leading to generation of Congestion Revenue. The Petitioner is proposing a mechanism which does not result in the generation of Congestion Revenue. This is thus a violation of the provisions of the Regulation 33(i) | Reg 33(i) of PMR indicates that IF congestion rent were to get created, the same would be transferred to NLDC and CERC shall eventually decide as to how to deal with this fund in line with Reg 33(ii) of PMR.<br>The Regulation 33(i) It cannot be held to mean that Congestion rents have to be necessarily extracted. In which case, all bidding zones during all time-blocks should have congestion: an absurd interpretation of the Regulation.<br><br>The fact that there could be a reduction (if not complete elimination) in Congestion amount due to proposed Market Splitting methodology is in the larger interest of the country. |

| Sl no | Prayer | Rejoinder |
|---|---|---|
| 1 | Methodology of revised pricing in case of Market splitting based on weighted average price in the two or more sub markets proposed is not maintainable and such a process would be against the provisions of the PMR, 2010. | The Respondent's submissions have been sequentially disproved by the petitioner. Therefore respondents prayers may kindly be overturned |

# GMR Energy Limited

| Sl no | Prayer | Rejoinder |
|---|---|---|
| 1 | Expressed unanimity with the mechanism proposed by the petitioner and appreciated the advantages of the same over the existing mechanism. | We agree with respondent's comment. |

# THANK YOU

PXIL
Transforming Power Markets

POWER EXCHANGE INDIA LIMITED
3rd floor, 'B' wing, Exchange Plaza, Bandra-Kurla Complex, Bandra (East), Mumbai - 400 051, India.
Tel: +91 22 2653 0500 / 0541 Fax: +91 22 2659 8397
www.powerexindia.com