

Amended Month(s) Ahead Contract Petition of PXIL providing inclusion of additional prayers in the Petition

Petition no: 229/MP/2021

Title: Petition under Section 66 of The Electricity Act, 2003 read with the Regulation 25 of the Central Electricity Regulatory Commission (Power Market) Regulations, 2021 for approval of introduction of, Month(s) Ahead Contracts at Power Exchange India Limited.

1. PXIL submitted Petition to Hon'ble Commission seeking approval to introduce Month(s) Ahead Contract that would operate in the segment of Term Ahead Contract under provisions of Regulation 5 (3) of CERC (Power Market) Regulations, 2021

2. The Prayers submitted in the Petition are:
 - a. To allow the petitioner to introduce Monthly Contracts which can be traded on Three (3) Month, Two (2) Month and One (1) Month Ahead basis
 - b. To allow the petitioner to introduce power exchange-specific seasonal duration contracts which can be traded on Three (3) Month, Two (2) Month and One (1) Month Ahead basis
 - c. To allow the petitioner to introduce Monthly Contracts in Renewable Energy in the GTAM segment for transaction in Renewable Energy for benefit of obligated entities to meet their Renewable Purchase Obligation, based on the approval accorded by this Hon'ble Commission for introduction of GTAM contracts on the petitioner's platform, vide an order in Petition No. 228/MP/2020
 - d. To allow petitioner to extend the approval accorded to month(s) ahead contract to hydro segment under GTAM and consequently, allow petitioner to customize the Contract specifications to introduce Hydro Monthly Contract.
 - e. To adjust the filing fees for processing this Petition against the fees paid earlier by the Petitioner in Petition No. 59/MP/2021
 - f. Pass such other order(s) that this Hon'ble Commission may deem fit to remove difficulties and allow implementation of the above
 - g. Pass such other relief(s)/ order(s) that this Hon'ble Commission may deem fit

3. The Petition was heard on 30.11.2021, CERC vide ROP dated 30.11.2021, at Para 5 to issue Public notice as under:

*"Para 5
(d) The Petitioner to give wide publicity to its proposed contract by uploading the same on its website for inviting comments from the stakeholders and general public and file an affidavit with detailed study incorporating the comments received from the stakeholders and the response thereon."*

4. PXIL vide Public notice reference no PXIL/S&R/21-22/04 dated 14.12.2021 requested stakeholders to submit their comments / suggestion on 'Introduction of Month (s) Ahead Contract'

5. PXIL now intends to amend the Prayers provided at S no 2, by including the following:
 - a. **To allow Petitioner to introduce different matching mechanism in existing Contracts and new Contracts in Term Ahead Market, Green Term Ahead Market and Hydro Green Term Ahead Market**
 - b. **Change nomenclature from "Discriminatory Price - Double sided auction" to "Multiform Price matching"**

- c. **To allow Petitioner to increase the tenure of Month (s) Ahead Contract from existing one (1) month to duration to be prescribed in alignment with proposed General Network Access Regulations**

6. The detailed submission for inclusion of the above three prayers is provided here under

Introduction of different Matching mechanisms and Price discovery from time to time for Term Ahead Contracts

7. The Petitioner proposes to introduce different matching and price discovery mechanisms on its platform for Term Ahead Market (TAM), from time to time, as may be required to bring about depth of market and to ensure transparency
8. The goal of the matching mechanisms and price discovery shall be to achieve an open, transparent and competitive bidding process which doesn't lead to any collusive behaviour, suppresses any incidence of gaming and reduces entry barriers for participation
9. The matching mechanism and price discovery to be adopted for various products in the TAM shall be based on the acceptability and requirements of the market participants as well as the feasibility and efficiency of these mechanisms for a particular segment and contract type.
10. Further, the matching mechanism and pricing for various products shall be designed to induce a behaviour from the market participants which is consistent with the efficiency objectives of least cost dispatch of generation that balances the demand and supply and minimizes the transmission congestion.
11. The design of matching mechanism is an iterative process and should have sufficient flexibility for any changes based on the actual experience and performance review of the products. Thus, the Petitioner is proposing to use both the Batch Auctions and /or the Continuous matching mechanisms in the TAM Contracts (including Green TAM) with an Order entry system which would be either Closed or Open type. The matching mechanism and type of Order entry would be informed to participants in the form of Circulars from time to time, which would contain details on the following parameters:

a. Auction Type

i. Batch Auction:

During the trading hours, participants will be submitting their Orders and the Order book will be created by the trading system. After closure of trading session, participants will not be allowed to submit Order, and the trading system will proceed with matching and discovery the Price for Settlement of trades.

ii. Continuous Matching Mechanism

In trading session of products with Continuous Matching methodology, the participants shall submit buy and sale Orders on a continuous basis during the trading period. The buyers and sellers Orders will be matched on continuous basis in accordance with price-time priority. This type of matching mechanism is already applicable in different Contracts of Term Ahead Market and Green Term Ahead Market (GTAM) i.e. Intra Day, Day Ahead Contingency and Any Day Contracts

b. Order Visibility

i. Open type

During the trading hours, the Orders being entered by any participant is visible to any other participant who accesses the Product, without the identifying information of a participant being divulged. This type of Order entry is applicable in existing TAM and GTAM i.e. Intra Day, Day Ahead Contingency, Weekly and Any Day,

ii. Closed type

During trading hours, the participants cannot view the Orders entered by any other participants. The identifying information of a participant is also not revealed. This type of Order entry is applicable in existing Day Ahead Spot, Real Time Market, Renewable Energy Certificate and Energy Savings Certificate Contract.

c. Participation Rights

i. Single sided

During the trading hours, the Orders are entered by one side of participants i.e. Buyer or Seller to meet requirement of counterparty side.

ii. Double sided

During the trading hours, the Orders are entered simultaneously by Buyer and Seller.

d. Price Discovery mechanism

i. Uniform Price

In Uniform Price mechanism, the trades are settled at a single price based on intersection of aggregate demand and supply curves. All cleared Buyers will purchase at Uniform Price and all Sellers will be paid at the Uniform Price. This type of Price discovery mechanism is applicable in existing Day Ahead Spot, Real Time Market, Renewable Energy Certificate and Energy Savings Certificate Contract.

ii. Pay-as-bid

In 'Pay-as-bid' method, the highest priced buyer (i.e. the best buyer) would be identified and the transaction would be cleared at buyer's price.

Illustration:

Suppose during a session Seller intends to Sell 50 MW at price above Rs. 3.45/kWh and three Buyers submit their Orders as under:

Seller	Price (Rs. / kWh)	Quantity (MW)
S1	3.45	50

Buyer	Price (Rs. / kWh)	Quantity (MW)
B1	3.55	50
B2	3.65	50
B3	3.75	50

The system will identify B3 as the best Buyer and clear 50 MW at 3.75 / kWh

iii. Get-as-Offered

In 'Get-as-Offered' method, the least cost Seller (i.e. the best Seller) would be identified and the transaction would be cleared at Seller's price.

Illustration:

Suppose during a session, a Buyer intends to purchase 50 MW at price lesser than Rs. 2.80/kWh and three Sellers submit their Orders as under:

Buyer	Price (Rs. / kWh)	Quantity (MW)
B1	2.80	50

Seller	Price (Rs. / kWh)	Quantity (MW)
S1	2.78	50
S2	2.72	50
S3	2.68	50

The system will identify S3 as the best Seller and clear 50 MW at Rs. 2.68 / kWh

iv. Average of best-Buy and best-Sell

In this method, the highest priced Buyer (i.e. the best buyer) is matched with the lowest priced Seller (i.e. the best Seller.), and the transaction will be cleared at the mid-point of the price quoted by them, this process will be continued till Order quantity is exhausted. The matching mechanism is operated in some TAM Contracts. In this mechanism, the Orders are subjected to multiple clearings till the Order quantity is exhausted.

Illustration:

Suppose during a session two Sellers and two Buyers submit their Orders as under:

Seller	Price (Rs. / kWh)	Quantity (MW)
S1	2.5	5
S2	4	10

Buyer	Price (Rs. / kWh)	Quantity (MW)
B1	3	15
B2	4.5	10

In 1st clearing, the system will identify S1 as the best Seller and B2 as the best Buyer, the system will clear 5 MW at Price of Rs. 3.5/kWh.

In 2nd clearing, the system will identify S2 as the best Seller and B2 as the best Buyer, the system will clear 5 MW at Price of Rs. 4.25/kWh. No further clearing is possible

e. Order Types

i. Normal Order

A Normal Order contains price-quantity pair(s), where a Buyer is willing to buy all quantity upto the value specified at or below the quoted price and Seller is willing to sell all quantity upto the value specified at or above the quoted price.

ii. Block Order

In Block Order, the exchange may allow different types of Block Orders as felt necessary from time to time like:

- "All Or None" type of Block Orders which contain price-quantity pair(s) for a set of contiguous time slots and shall be considered indivisible whereby they shall either be included or excluded in totality based on the selection criteria of meeting the clearing prices on the average in their respective bid zone.

Illustration A:

Adequate Quantity and Price in all Time Slots

	Type of Order	Time Slots	1	2	3	4	5	6	7	8
Sell	Block Order	Price (Rs. / kWh)	4							
		Qty (MW)	50							
Buy	Normal Order	Price (Rs. / kWh)	6	6	5	5	6	5	4	5
		Qty (MW)	50	50	70	50	60	50	50	60

In the above case, since there are corresponding Buy Orders in all the time slots, at a better Average Price than the Sell Block Order, the Sale Block Order gets cleared fully.

Illustration B:

Inadequate Quantity in some Time Slots

	Type of Order	Time Slots	1	2	3	4	5	6	7	8
Sell	Block Order	Price (Rs. / kWh)	4							
		Qty (MW)	50							
Buy	Normal Order	Price (Rs. / kWh)	6	5	4	5	5	5	4	5
		Qty (MW)	50	20	70	30	60	50	30	10

In the above case, due to inadequate corresponding buy quantities in Time Slots 02, 04, 07 and 08, the Sale Block Order does not get cleared for any hour.

Illustration C:

Average Price Criteria

	Type of Order	Time Slots	1	2	3	4	5	6	7	8
Sell	Block Order	Price (Rs. / kWh)	4							
		Qty (MW)	50							
Buy	Normal Order	Price (Rs. / kWh)	5	2	4	3	4.5	4	2.25	2.5
		Qty (MW)	50	60	60	50	50	50	50	55

In the above case, due to inadequate corresponding buy prices in Time Slots 02, 04, 07 and 08, the Average Price criteria for the Block Order is not met and therefore the Sale Block Order does not get cleared for any hour.

- Any other type of Block Orders

iii. Fill or Kill Order

Fill or Kill (“FOK”) means that either the entire order quantity shall be matched against resting order according to the matching rules of the selected product or

the order shall be cancelled i.e. either the order shall be matched fully or cancelled. FOK type orders would also never rest in the Order book

iv. Fill and Kill Order

Fill and Kill (“FAK”) means that the quantity which can be matched against resting order according to the matching rules of the selected product shall be matched and balance shall be immediately cancelled. FAK type orders would never rest in the order book

v. Linked Orders

Orders can be linked together, i.e. the acceptance of individual Orders can be made dependent on the acceptance of other Orders. The Order whose acceptance depends on the acceptance of another Order is called “*Child Order*”, whereas the Order which conditions the acceptance of other Order is called “*Parent Order*”

vi. Any other type of Order

12. For any Contract the Auction type, Order Visibility, Participation Rights and the Price Discovery Mechanism would be pre-specified combining the parameters mentioned hereinabove. The Order Types specific to each contract would be mentioned in the contract specifications.

Some examples of such combinations for contracts are as follows:

- a. **Day Ahead Spot Product** – The matching mechanism and the Price discovery characteristics being:
 - i. Auction type - Batch
 - ii. Order visibility - Closed
 - iii. Participation Rights - Double Sided
 - iv. Order type – Normal, Block
 - v. Price discovery - Uniform Price

- b. **Any Day Dynamic – The matching mechanism being:**
 - i. Auction type - Continuous
 - ii. Order visibility - Open
 - iii. Participation Rights - Double Sided
 - iv. Order type – Limit, FAK, FOK
 - v. Price discovery – Pay-as-Bid (orders cleared where prices of buyer and seller exactly match on a price time priority basis)

- c. **Forward Auction** – The matching mechanism for Forward Auction requisitioned by a Single Seller being
 - i. Auction type - Batch
 - ii. Order visibility - Open
 - iii. Participation Rights - Single Sided (only Buyers participate against requisition made by a Single Seller)
 - iv. Order type – Normal, Block
 - v. Price discovery – Pay-as-bid

Multiple Buyers compete among themselves to place Orders for the amount they are willing to purchase the goods or services, and at the end of the auction the Buyer with

the highest Bid wins. On completion of auction process, the trade allocation would be made on bucket filling basis

Illustration:

Suppose during a session a Seller submits an Order for sale of 50 MW at price not less than Rs. 2.45 per kWh, during the same session multiple Buyers submit their bids and after completion of forward auction, if the bids are as under:

Seller	Quantity (MW)	Buyer	Price (Rs. / kWh)	Quantity (MW)
S1	50	B1	3.55	50
		B2	3.65	15
		B3	3.75	25

The system will identify B3 as the best Buyer and since B3 cannot fulfill the complete requirement of S1, the allocation will be made on bucket filling basis as under:

- Step-1: The full quantum quoted will considered from highest Buyer
- Step-2: The balance quantum will be considered from next highest Buyer, and this process will be repeated till the quantum required by Seller is exhausted.
- Thus, the allocation will be as under:

Seller	Quantity (MW)	Buyer	Offered Quantum (MW)	Cleared Quantum (MW)	Price (Rs. / kWh)
S1	50	B3	25	25	3.75
		B2	15	15	3.65
		B1	50	10	3.55

- d. **Reverse Auction** – The matching mechanism for Reverse Auction requisitioned by a Single Buyer being:
- i. Auction type - Batch
 - ii. Order visibility - Open
 - iii. Participation Rights - Single Sided (only Sellers participate against requisition made by a Single Buyer)
 - iv. Order type – Normal, Block
 - v. Price discovery – Get-as-Offered

Multiple Sellers compete among themselves to place Orders for the amount they are willing to sell the good or service, and at the end of the auction the Seller with the lowest Offer wins. On completion of auction process, the trade allocation would be made on bucket filling basis

Illustration:

Suppose during a session a Buyer submits an Order for purchase of 50 MW at price lesser than Rs. 2.80 per kWh, during the same session multiple Sellers submit their bids and after completion of reverse auction, if the Offers submitted are as under:

Buyer	Quantity (MW)
B1	50

Seller	Price (Rs. / kWh)	Quantity (MW)
S1	2.78	50
S2	2.72	15
S3	2.68	30

The system will identify S3 as the best Seller and since S3 cannot fulfill the complete requirement of B1, the allocation will be made on bucket filling basis as under:

- Step-1: The full quantum quoted will be considered from cheapest Seller
- Step-2: The balance quantum will be considered from next cheaper Seller, and this process will be repeated till the quantum required by Buyer is exhausted.
- Thus, the allocation will be as under:

Buyer	Quantity (MW)
B1	50

Seller	Offered quantum (MW)	Cleared quantum (MW)	Price (Rs. / kWh)
S3	30	30	2.68
S2	15	15	2.72
S1	50	5	2.78

Thus, the matching mechanism and Price discovery along with other characteristics of Order specific to each contract would be prescribed in the contract specifications and would be notified well in advance to all participants through a public Circular.

13. It is submitted that Regulation 5(2) of Power Market Regulations, 2021 prescribes continuous matching mechanism when delivery of power is on day of transaction or the next day i.e. 'T day' or 'T + 1 day'. The Petitioner has offered Intra Day Contract and Day Ahead Contingency Contract in Term Ahead Market segment and Green Term Ahead Market segment, wherein the price discovery happens under Continuous matching mechanism. The Continuous matching mechanism would also be made applicable in the Intra Day Contract and Day Ahead Contingency Contract proposed to be offered in Hydro Green Term Ahead Market segment after receipt of approval in Petition no 195/MP/2021.
14. It is submitted that based on market participants' requirement, the exchange should have the flexibility to change the matching mechanism in any TAM Contract operating under provisions of Regulation 5(3) of Power Market Regulations 2021, after intimating sufficiently in advance to the market participants by issuance of a Circular from time to time. The Petitioner, therefore, requests approval of this Hon'ble Commission to be allowed to introduce different matching mechanisms in its TAM Contracts, GTAM Contracts and proposed Hydro GTAM Contract where delivery is more than one day ahead i.e. 'T+2 or more'.

Change the nomenclature from 'Discriminatory Price – Double sided auction' to 'Multiform Price Matching'

15. The Petitioner submits that Hon'ble Commission in its Order dated 19.11.2010 in Petition no L-1/13/CERC-2010, had at s no 41 in Annexure to the Order directed that the name of price discovery mechanism be provided as 'Discriminatory Price – Double sided auction':

<i>Sr No.</i>	<i>Page No.</i>	<i>Clause No.</i>	<i>Observations / directions of the Commission</i>
41	54	Annexure 1B, 1C	<i>The words "Discriminatory price - Double sided auction" be added in the heading for Trading Methodology.</i>

16. The Petitioner further seeks approval of this Hon'ble Commission to change the nomenclature from "Discriminatory price – Double sided auction" to "Multiform Price Matching" without any change in the procedure for price discovery apropos such matching, in the business rules of the Petitioner. It is submitted, that except for the revision proposed, no other revisions are proposed in the existing Rules and Bye Laws of the petitioner.

Increase the tenure of Month (s) Ahead Contract from existing One (1) month to duration to be prescribed in proposed General Network Access Regulations

17. The Petitioner submits that in existing Petition it has sought approval to introduce Monthly Contracts which can be traded on Three (3) Month, Two (2) Month and One (1) Month Ahead basis. These Contracts would operate under provisions of CERC (Open Access in inter-State Transmission) Regulations, 2008 ("Open Access Regulations") as amended from time to time.
18. It is submitted that since Regulation 5 (3) (b) of PMR 2021 provides for scheduling and delivery of Term Ahead Contracts under Open Access Regulations, the Petitioner has proposed Month(s) Ahead Contract with separate application to be submitted for each month i.e. first month, second month and third month, as the case may be.
19. Further, the Petitioner submits that the Hon'ble Commission has vide Public notice no No. L-1/261/2021/CERC dated 16.12.2021 issued the Draft Central Electricity Regulatory Commission (Connectivity and General Network Access to the inter-State Transmission System) Regulations, 2021 ("GNA Regulations"). Regulation 28.1 of the draft Regulation provides for Temporary General Network Access ("T-GNA") to be provided for any period from (1) one time block and up to 11 (eleven) months.

"28. Application for grant of T-GNA

28.1. T-GNA may be applied for any period from 1 (one) time block and up to 11 (eleven) months"

20. The Petitioner submits that after notification of Regulations on General Network Access, the delivery period under Month(s) Ahead Contract shall be in compliance to new provisions and its amendment from time to time. In this regard, it is humbly sought that, once the GNA Regulations are notified, the Petitioner may be allowed to introduce contracts up to 11 months at the petitioner's exchange.