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विद्युत मंत्रालय/ Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
आर. ए. प्रभाग / Regulatory Affairs Division

To,

सचिव (सी.ई.आर.सी.),
केन्द्रीय विद्युत विनियामक आयोग,
6 वीं, 7 वीं और 8 वीं मंजिल, टावर बी, वर्ल्ड ट्रेड सेंटर,
नौरोजी नगर, नई दिल्ली-110029

Subject: CERC draft order dated 04.10.2024 in Petition No. 8/SM/2024 - Directions by the Commission to the Power Exchanges registered under the Central Electricity Regulatory Commission (Power Market) Regulations, 2021- regarding.

Sir,

Reference is invited to CERC draft order dated 04.10.2024 regarding directions to power exchanges for changes in Term Ahead market segment, Any Day Single Side Double Auction Segment, Intraday segment and Day Ahead Contingency segment.

Before finalizing the above order, CERC had invited views, comments, and suggestions from all stakeholders. In this regard, comments of CEA is attached at **Annexure**.

भवदीय,

(विक्रम सिंह / Vikram Singh)
मुख्य अभियंता (आर.ए.)/ Chief Engineer (RA)

Copy to:

1. मुख्य अभियंता (R&R), विद्युत मंत्रालय, श्रम शक्ति भवन, नई दिल्ली

Annexure

Comments of CEA on CERC draft order dated 04.10.2024 regarding directions to power exchanges

- I. CERC vide draft order dated 04.10.2024 has proposed the following changes in Term Ahead market segment, Any Day Single Side Double Auction Segment, Intraday segment and Day Ahead Contingency segment:
- a) *All Power Exchanges shall allow only the established pre-specified slots on the exchange platform for TAM contracts (including HP-TAM). These pre-specified slots shall include Base/RTC, Peak, Off-Peak (other than peak), and Night, wherein the peak period would be as defined by the NLDC. In the case of G-TAM, Power Exchanges shall have the liberty to pre-specify slots based on the generation profile of different technologies, as provided by the sellers. Exchanges should submit the pre-specified contracts for approval of the commission.*
 - b) *All Power Exchanges shall follow the timelines for different stages of ADSS contracts, including the bid receiving window/submission of interest quantity by sellers, IPO auction, Reverse Auction, and Bid acceptance window as follows:*

<i>Bid Receiving Window</i>	<i>Max. 2 days (48 hours)</i>
<i>IPO Auction</i>	<i>Max. 2 hours (120 mins)</i>
<i>Reverse Auction</i>	<i>Min. 2 hours (120 mins) with an extension up to 24:00 Hrs of auction day</i>
<i>Acceptance Window</i>	<i>Max. 2 days (48 hours)</i>

- c) *In view of the very low liquidity in Intra Day Contracts since its introduction, the availability of the alternative Real-Time Market, and to avoid market fragmentation, it is proposed to withdraw Intra-Day Contracts in all the Power Exchanges from a prespecified date, in terms of Regulation 25(3) of PMR 2021.*
 - d) *It is proposed to modify the price discovery mechanism in the case of Contingency Contracts to Uniform Price Step Auction from the existing Continuous matching. The Commission proposes to issue amendment(s) in PMR 2021 to this effect.*
 - e) *Till the time the amendments to PMR 2021 come into effect, the Power Exchanges shall follow the directions in case of Contingency contracts as under:*
 - i) *Power Exchanges to make changes in the software/ market watch so that all the parties are able to see all the buy and sell offers for 10 minutes before the order gets transferred to the order book; after the expiry of this period, best buy and sell bids get cleared, and*
 - ii) *Power Exchanges to display information regarding the number and volume of bids received (both buy and sell) on their website, in addition to the data on traded volume.*
- II. In this regard, it is submitted that in order to find anomalies in the Term ahead Market and Day Ahead contingency market, CEA had also examined the bid data of TAM & DAC segments of all three exchanges for the period of March

2024 to May 2024. Based on the findings of the aforementioned exercise and proposed changes in the CERC order, following observations are made:

1. Term Ahead Market Segment:

Currently, TAM segment offers procurement of short term power for delivery from T+2 to T+90 days. There are four (4) different types of contracts available in the TAM segment namely Daily, Weekly, Monthly and Any Day Single Side Reverse Auction. The price discovery methodologies for Daily, Weekly and Monthly contracts is based on Uniform Price Step Auction whereas, the Any-Day Single Sided Contract is based on Reverse auction.

Last Minute Bids in TAM

1.1 The bidding time in TAM is from 12:00 to 17:00 for Daily, Weekly and Monthly contracts. Subsequently, after 17:00 hrs. the matching of orders takes place in accordance with matching rules. However, it is observed that trading in TAM segment did not occur on everyday basis i.e. on few days no transaction took place in TAM. Further, on many days the transactions in TAM consisted of only one buyer and one seller. On analyzing the bidding behaviour of participants it was observed that majority of the bids comes after 04:00 PM.

The Bid details of trades executed in March 2024 in TAM Daily in one of the exchange is given below:

Total Bid entries	3756	
Total Days Trading	12	
Total Buyers	9	
Bids after 4 PM	3516	93.6 % of total bids
Bids after 4:30 PM	3470	92.3 % of total bids
Bids after 4:45 PM	1658	44.1 % of total bids
Bids after 4:50 PM	356	9.47 % of total bids
Bids after 4:55 PM	28	0.74 % of total bids

Similarly, the Bid details of trades executed in March 2024 in TAM Daily in another exchange is given below:

Total Bid entries	1302	
Total Days Trading	4	
Total Buyers	4	
Bids after 4 PM	1284	98.62 % of total bids
Bids after 4:30 PM	978	75.11 % of total bids
Bids after 4:45 PM	341	26.19 % of total bids

1.2 One typical bidding behaviour noticed from the bid data is that on many days only a single buyer or seller comes at the closing time of call auction phase i.e. less than 5-10 minutes before the closing of auction. These bids also gets a counter offer within few seconds/minutes. Such last minute bids are not healthy for competitive bidding as it provides very less response time to other participants. **This also raises suspicion of collusion between the buyers and sellers.** Few such cases are tabulated in **Appendix-I.**

Non Standard Bids

1.3 In Term Ahead Market, the majority of volume is transacted in Any Day Single Side and Daily contracts. It was observed that Daily contracts allows greater flexibility to market participants as they can bid according to their custom delivery profile and customized delivery period whereas in weekly and monthly contracts only fixed duration products for fixed delivery period are available. A list of delivery based products available on the exchanges is given at **Appendix-II**.

All three exchanges offers different type of delivery based products/per-specified slots in Daily, Weekly, Monthly contracts of TAM based on different delivery block range. These delivery based products/pre-specified slots can be used to procure/sell power during evening peak, morning peak, RTC etc.

In case of IEX & HPX, there is one differentiated product that is only available in the Daily contracts i.e. Hourly product. In case of PXIL, only hourly slots are available for all three contracts. By using the hourly product, market participants can bid as per their customized delivery profile which leads to creation of non-standardized bids/contracts. While, hourly product offers flexibility to the market participants, it limits the competition in the market due to its non-standardized nature. As a general practice, **all exchanges around the world offers standardized contracts only to promote competition.**

Trading Days in TAM

1.4 Even though trading in the Daily, Weekly and Monthly contracts is allowed mostly on everyday basis, it was observed that trading in these contracts took place on very limited days in a month. A breakup of the number of trading days on which transactions took place in TAM in each of the three exchanges during March 2024 to May 2024 is given below:

Contract Type	No. of days on which trade took place in March, 2024		
	IEX	PXIL	HPX
Daily	10	8	4
Weekly	1	1	0
Monthly	5	8	1
Contract Type	No. of days on which trade took place in April, 2024		
	IEX	PXIL	HPX
Daily	18	13	7
Weekly	0	0	0
Monthly	1	0	1
Contract Type	No. of days on which trade took place in May, 2024		
	IEX	PXIL	HPX
Daily	15	7	8
Weekly	0	0	0
Monthly	3	3	2

1.5 The Contract wise trading days allowed in TAM is as follows:

Contracts	Trade Opening	Trade Close	Trading Session Time	Trading Days	
Daily	T+2	T+90	12:00 To 17:00	Daily	
Weekly	TW+1	TW+12	12:00 To 17:00	Monday to Friday	
Monthly	TM+1	TM+3	12:00 To 17:00	Delivery Month 1	From 1st of Trading Month till 10 days Prior to the Last day of the Month
				Delivery Month 2	From 1st of Trading Month till 5 days Prior to the Last day of the Month
				Delivery Month 3	From 1st of Trading Month till Last day of the Month

D = Delivery Day, T = Trade Day, TW = Trade Week, TM = Trade Month

From the above table, it is noted that the market participants have a large number of trading sessions at their disposal for taking delivery on a particular date, week, month or a customized range.

When the market participants have the option of such large number of trading sessions for taking delivery of power for a day, week, month or any customized range within 90 days, the market gets fragmented and leads to lesser liquidity. Further, in addition to conventional TAM, the market participants have the option of GTAM and HPTAM segments, which further affects the liquidity in conventional TAM.

Conclusion:

1.5 As highlighted earlier, majority of the bids in all three power exchanges comes after the 04:00 PM. One argument for such behaviour is that such a behaviour is normal as majority of trading activity comes at the closing time in DAM as well as on DEEP portal also. However, DAM is a double sided closed auction and DEEP is based on reverse auction having time extension provision for last minute bids. As such, last minute bids do not have a major impact on the outcome in DAM and DEEP.

However, TAM is based on open auction where the buyer and seller can see the bids of each other during the trading time. On days when liquidity is very less or no offers are available till the gate closure time, such last minute bids nearer to the gate closure time can significantly change the outcome of the auction. These last minute bids also devoid the other market participants of the opportunity of enough response time.

- 1.6 The above problem gets aggravated further if such buyers and sellers also gives customized delivery requirements using the hourly product which leads to a non competitive transaction between the two parties as the product for bidding becomes non-standardized. As per the economic theory, competition only happens when available products in the markets are standardized. In the matured and developed markets also only standard products are available on the exchanges. It is possible to match demand profile by having an array of standard buy and sell transactions.

We agree with the CERC proposal that only standardized delivery based products/pre specified slots should be available on the exchanges. CERC can specify the number and duration of such products. We are also of the view that hourly based delivery product is also a non-standard product.

- 1.7 The number of trading sessions available for a particular delivery date or period plays a major role in the overall liquidity and competition in the market. At present, the market participants have a large number of trading sessions available for taking delivery on a particular date, week, month or a customized range. However, the transactions in TAM is taking place on very limited days in a month against the available trading days which is resulting in non competitive transactions and lesser liquidity.

- 1.8 To improve liquidity, competition and fairness in the Term Ahead Market, following additional recommendations are made:

a) Term Ahead Market should also have a provision for time extension (as in case of Reverse Auction) to take care of last minute bids. As such, in case any bid is received after 16:45 hrs, the market should be extended by 15 minutes. In case, any bid is received against the available offers during the last 5 minute of the extended period, the market should again be extended by 15 minutes. This process can continue up to 24:00 hrs of auction day. In case, no bid is not received after 16.45 hrs in a particular product category, such as RTC or Evening peak, the time extension shall not be applicable to that product.

b) The trading days for Monthly, Weekly and Daily contracts should be limited. For monthly contracts, the trading can be limited to 2 days in a month. Similarly, for weekly contracts, the trading can be done on a single day (say Tuesday) of the previous week.

c) For Daily contracts, the delivery period may be restricted to a maximum of 6 days per trading session and trading can be done for taking delivery between T+2 to T+8 only. This would also help in increasing liquidity and competition in the fixed duration contracts such as weekly and monthly contracts. For example:

For taking delivery from 7th November (Thursday) to 17th November, 2024 (Sunday), trading can be done in Daily contracts for 7th November to 11th November and rest delivery can be taken using Weekly Contracts from 18th November to 24th November.

2. Day Ahead Contingency

The Day ahead contingency market opens at 13:00 hrs after completion of Day ahead market and closes at 23:30 hrs before closing of the trading Day. DAC is based on continuous matching which means that buyer or seller can instantaneously match an offer when it comes up and these bids go out of the system after matching. The best buy and best sell offer is available to the market participants for a particular delivery period in particular product.

- a) Following products based on delivery periods are available in DAC on the exchanges:

Segment	Block Type	Delivery Timeblock	Bidding Time (hrs)	Trading Day	Region
Day Ahead Contingency	Block Wise	96 (15 Mints Contracts)	13:00 to 23:30	Everyday	ALL REGION
	Hourly	24 Hourly Contracts			
	BASE	one contract for RTC Power			

Green DAC (SOLAR/NON-SOLAR/HYDRO)	Block Wise	96 (15 Mints Contracts)	13:00 to 23:30	Everyday	NATIONAL
	Hourly	24 Hourly Contracts			
	BASE	one contract for RTC Power			

The market participants can bid for delivery in 15 minute timeblocks, hourly or Round the clock. However, the matching can only be done in the product category in which the bid is placed. There is also green DAC segment in where solar, non-solar, hydro power can be traded. Further, the market participants have the option to put a regional bid or a national bid. The above delivery based products are available in both IEX and HPX

- b) In PXIL, the product category is different to that of IEX and PXIL. The following products are available in DAC in PXIL :

Conventional Power Product	
1. DAC Continuous Static Product	2) DAC Continuous Dynamic Product
The DAC Static product has fixed hourly delivery period (24 hourly slots) and matched accordingly. Partial quantity can also be matched in these products. In addition to the above, the DAC Static Solar and DAC Static Non Solar products have fixed fifteen minutes period (96 daily slots).	In DAC Dynamic product, the participants can choose any Delivery Period (hours/15 minutes in a day), as per their requirement. Such orders for a delivery period can match with opposite orders, if such opposite orders are also of the same delivery period. However, partial quantity may also get matched.

The Matching for each of the DAC Continuous Static Products and DAC

Continuous Dynamic Products are separate i.e. buy orders of one product will match with sell orders of the same product and vice versa. In case of DAC static, if a market participant submits a delivery range such as 03:00 to 06:00 hrs, the same gets splitted into hourly bids of 03:00 to 04:00, 04:00 to 05:00 and 05:00 to 06:00 hrs. However, in case of DAC dynamic product, the bid submitted by a market participant for a delivery range such as 13:15 to 15:45 hrs. is treated as a complete block and shall be matched only with another bid offering delivery range of 13:15 to 15:45 hrs.

Low Market Depth

- 2.1 The bid data of conventional DAC of all three exchanges for the period of March 2024 to May 2024 was examined to assess the level of completion in this segment and behaviour of market participants in each of the products offered by the exchanges. The number of bids received in each product category was worked out and summarized in **Appendix-III**

It was noted that majority of transaction for HPX and IEX happened in the 15 minute product. In IEX, it is observed that on an average the DAC segment receives two bids for a 15 min time block per day and 1 bid for 1 hour block everyday. Whereas, In HPX, the DAC segment receives two bids for a 15 min time block per day and less than 1 bid for 1 hour block everyday

In PXIL, the products are different in comparison to IEX and HPX and majority of transaction took place in the DAC Dynamic segment as it allows counter offers against a block of delivery range. In March, 2024 there were 329 distinctive delivery block ranges submitted by the market participants against which around 2300 counter bids were submitted. This comes out as 0.23 bids per delivery block range per month.

- 2.2 The above data indicates that the market depth is low in DAC. Moreover, the longer trading session from 13:00 to 23:30 and customized delivery bids adds to the problem of lower market depth. The data also shows that majority of transactions are completed in DAC before 18:00 hrs.

Non competitive transactions

- 2.3 One of the trends which comes out of the DAC bid data is that majority of the time, very less or no open offers are available for a particular delivery period due to lower market depth. **Whenever a buy or sell offer is made, the same gets a counter offer immediately and these bids goes out of the system within seconds. Since, the market depth is less, there are apprehensions that some market participants comes with a prior understating in DAC segment to perform targeted transactions with each other.**
- 2.4 Products like DAC Dynamic allows user to submit bids for taking delivery in customized block which gets matched only with a counter bid of same customized delivery block. No partial matching is allowed in this segment. This results in a customized delivery profile bid and lower competition.

Regional and National contracts

2.5 In DAC and TAM, Seller and buyer can bid in national contract. Also, Seller can submit bid for the contract of that region to which he belongs. However, a buyer can buy any National/regional contract. Ideally, the bids should be matched on a national level, however, due to congestion in certain pockets of transmission system regional bids are allowed. As shown in the previous sections there is less liquidity in the DAC & TAM and regional bids further fragments the market as bid of a particular region can only be matched with the bid on that region. This results in different prices in different regions for a particular delivery block.

Conclusion:

2.6 Presently, DAC market provides avenue to market participants to secure power for next day in case their power is not cleared in DAM or if they face any contingency. The price matching methodology is Continuous matching in this market. However, it is noted that due to less liquidity, longer duration trading window i.e. from 13:00 to 23:30 hrs and continuous matching methodology, the competition in this segment is very less. As such, possibility of market participants doing transactions with mutual understating increases and results in non-competitive transactions.

2.7 **The draft CERC order has offered a stopgap solution to make buy and sell offers visible for 10 minutes before the order gets transferred to the order book and cleared based on best buy and sell bids.**

The above solution needs more clarity as it is not known from which instance this 10 minute window shall be counted. What shall be the treatment of an offer which is better than the rest offers but does not complete the 10 minute requirement? As such, the offered solution needs a proper framework and prudent testing for it to be effective.

2.7 Following additional recommendations are made to increase competition in this segment:

a) **A long term and prudent solution to increase the competition and efficiency in the DAC market, it to change the existing Price matching methodology of Continuous Matching to Open Auction (similar to Daily, Weekly & Monthly contracts) which is also proposed in the draft CERC order. The current trading window in DAC is from 13:00 to 23:30 hrs. To implement the uniform price step open auction methodology in DAC, the current continuous trading session may be split into two or three trading session. For example:**

Session-I	13:00 – 15:00 hrs
Session-II	17:00 – 19:00 hrs
Session-III	21:00 – 23:00 hrs

This would ensure that late contingencies are covered by the third trading session and the first trading session would allow the participants to timely address their contingency

- b) Products like DAC Dynamic which allows matching only against a customized delivery block may be stopped as this product also leads to creation of non-standardized bids/contracts.
- c) The current algorithm may be optimized to prioritize matching of bids on a national level considering the improvement in congestion. The same optimization can also be considered for TAM.

3. Intraday contracts

The draft CERC order has proposed to withdraw the Intra-Day Contracts in all the Power Exchanges in view of the very low liquidity in Intra Day Contracts and availability of the alternative Real-Time Market. **This is a welcome step as it will help to consolidate the already fragmented market.**

4. Any-Day Single-Sided Contracts (ADSS)

The draft CERC order has proposed the timelines for different stages of ADSS contracts, including the bid receiving window/submission of interest quantity by sellers, IPO auction, Reverse Auction, and Bid acceptance window which is also a welcome step. **However, it is noted that only maximum duration has been specified for Bid receiving window & IPO Auction. To ensure transparency and competition, it is recommended that minimum time limit must also be specified in case of Bid receiving window & IPO Auction. Further, the reverse Auction shall be conducted only during normal working hours.**

Appendix-I

Summary of number of buyer and seller in TAM Daily of IEX

Date	Count of Buyers	Buyer Bid timing	Count of Sellers	Seller Bid Timing	Remarks
01-Mar-2024	1	04:47	2	04:33 04:35	
07-Mar-2024	1	04:42	1	04:53	Same trader
14-Mar-2024	2	04:37 04:55	2	04:37 04:56	1 buyer and 1 seller of same trader
18-Mar-2024	1	04:51	1	04:49	
20-Mar-2024	1	04:39	1	04:39	Same trader
23-Mar-2024	1	04:54	2	04:49 04:50	
24-Mar-2024	1	04:34	1	04:38	
29-Mar-2024	1	04:47	1	04:52	
01-Apr-2024	1	04:39	1	04:47	
12-Apr-2024	1	04:38:45	1	04:38:35	Same trader
15-Apr-2024	1	04:58:54	1	04:58:03	
06-May-2024	1	04:55:05	1	04:56:21	
20-May-2024	1	04:20:52	1	04:40:23	
23-May-2024	1	04:27:37 04:27:48	2	04:25:52 04:28:47	
29-May-2024	1	04:14:26	1	04:14:35	
31-May-2024	1	04:44 04:49	2	04:50 04:55	

Summary of number of buyer and seller in TAM Daily of HPX

Date	Count of Buyers	Buyer Bid timing	Count of Sellers	Seller Bid Timing	Remarks
12-Mar-2024	1	04:36 04:37	3	04:39 04:40	same trader for all 3 sellers
15-Mar-2024	1	04:44	1	04:26	
22-Mar-2024	1	04:35	1	04:49	
06-May-2024	1	04:35	1	04:18	
31-May-2024	1	04:59	2	04:58 04:59	

Summary of number of buyer and seller in TAM Daily of PXIL

Date	Count of Buyers	Buyer Bid timing	Count of Sellers	Seller Bid Timing	Remarks
01-Mar-2024	1	04:41 04:41	1	04:38 04:39	
02-Mar-2024	1	03:48	1	04:19	
12-Mar-2024	1	04:39	1	04:43	
16-Mar-2024	1	04:58	2	04:59	Same trader for both sellers
18-Mar-2024	1	04:46 04:58	7	04:47 04:49 04:50 04:51 04:58	Same trader for buyer and sellers
20-Mar-2024	1	04:34	1	04:44	
29-Mar-2024	1	04:58	2	04:57 04:58	Same trader for both sellers
30-Mar-2024	1	04:53	1	04:57	
01-Apr-2024	1	04:52 04:53	1	04:56 04:57	
03-Apr-2024	1	03:14	1	04:56	
14-Apr-2024	1	04:21	3	03:23 03:24 03:25	Same trader for all sellers
16-Apr-2024	1	04:57	1	04:58	
28-Apr-2024	1	04:45	1	04:46	
30-Apr-2024	1	04:05	1	04:22 04:23	
02-May-2024	1	4:54 4:55 4:56	1	4:53 4:55 4:56 4:57	
18-May-2024	1	04:57	1	02:45	
21-May-2024	1	4:47 4:48	1	4:55 4:56	

Appendix-II

Delivery Based products available on the exchanges in TAM

HPX

Segment	Block Type	Delivery Timeblock
DAILY (Conventional Power)	DYP	18:00:00-23:00:00
	DYB	00:00:00-24:00:00
	DYD	07:00:00-18:00:00
	DYN	00:00:00-07:00:00;23:00:00-24:00:00
	DYK	00:00:00-06:00:00;22:00:00-24:00:00
	DYE	18:00 to 22:00
	HOURLY	24 Hourly Contract (00:00-01:00, 01:00-02:00....etc.)
WEEKLY (Conventional Power)	DYP	18:00:00-23:00:00
	DYB	00:00:00-24:00:00
	DYD	07:00:00-18:00:00
	DYN	00:00:00-07:00:00;23:00:00-24:00:00
	DYK	00:00:00-06:00:00;22:00:00-24:00:00
MONTHLY (Conventional Power)	DYP	18:00:00-23:00:00
	DYB	00:00:00-24:00:00
	DYD	07:00:00-18:00:00
	DYN	00:00:00-07:00:00;23:00:00-24:00:00

IEX

Products	Daily	Weekly	Monthly
Evening Peak	15:00:00 - 24:00	18:00:00 - 21:00:00	18:00 - 24:00
	18:00:00 - 23:00:00	18:00:00 - 22:00:00	18:00 - 23:00
	19:00:00 - 22:00:00	18:00:00 - 23:00:00	
		19:00:00 - 23:00:00	
Night	00:00:00 - 06:00:00; 22:00:00 - 24:00	00:00:00 - 05:00:00; 22:00:00 - 24:00	00:00 - 07:00
	00:00:00 - 07:00:00; 17:00:00 - 24:00	00:00:00 - 06:00:00; 22:00:00 - 24:00	
	00:00:00 - 07:00:00; 23:00:00 - 24:00	00:00:00 - 07:00:00; 23:00:00 - 24:00	
Day	07:00:00 - 18:00:00	07:00:00 - 18:00:00	07:00 - 18:00
	06:00:00 - 08:00:00		
Hourly	Hourly		
Base	00:00 - 24:00	00:00:00 - 24:00	00:00 - 24:00

PXIL

In PXIL, the Daily, Weekly and Monthly Contracts can be traded over any or all of the Trading slots.

Slot	Hours
Hourly Slots	Slots for any hour (s) between 00:00 to 24:00 Hrs

Appendix-III

Number of Bids in Day Ahead Contingency contract in IEX:

Month	Base		Avg. bid per day		15 min. Time Block				Hourly			
	Buy Bid	Sell Bid	Buy	Sell	Buy Bid	Sell Bid	Avg. bid per time block per day		Buy Bid	Sell Bid	Avg. bid per hour per day	
							Buy	Sell			Buy	Sell
March, 2024	34	34	1.10	1.10	3951	3951	1.33	1.33	0	0	0	0
April, 2024	27	27	0.90	0.90	5867	5867	2.04	2.04	439	439	0.61	0.61
May, 2024	36	37	1.16	1.19	6482	6455	2.18	2.17	764	761	1.03	1.02

No. of Bids in Day Ahead Contingency contract in HPX:

Month	Base		Avg. bid per day		15 min. Time Block				Hourly			
	Buy Bid	Sell Bid	Buy	Sell	Buy Bid	Sell Bid	Avg. bid per time block per day		Buy Bid	Sell Bid	Avg. bid per hour	
							Buy	Sell			Buy	Sell
March, 2024	14	35	0.45	1.13	1575	1833	0.53	0.62	0	0	0	0
April, 2024	7	3	0.23	0.10	4813	5523	1.67	1.92	5	5	0.007	0.007
May, 2024	7	5	0.23	0.17	7744	7874	2.60	2.68	11	11	0.02	0.02

Number of Bids in Day Ahead Contingency contract in PXIL:

Month	Base		Avg. bid per day		15 min. Time Block (DAC Dynamic)				Hourly (DAC Static)			
	Buy Bid	Sell Bid	Buy	Sell	Buy Bid	Sell Bid	Avg. bid per delivery range in a month		Buy Bid	Sell Bid	Avg. bid per hour per day	
							Buy	Sell			Buy	Sell
March, 2024	Product not available in PXIL				2293	2374	6.97	7.22	0	0	0	0
April, 2024					2838	2838	6.62	6.62	0	0	0	0
May, 2024					2663	2678	7.83	7.88	80	80	0.11	0.11

No. of bid profiles for delivery under 15 min. DAC Dynamic bids					
March, 2024		April, 2024		May, 2024	
Buy	Sell	Buy	Sell	Buy	Sell
329	329	429	429	340	340