

WEEKLY REPORTING OF OTC CONTRACTS: MONTHLY ANALYSIS

(APRIL 2012)

[An analysis of all weekly reports (reporting period 26th March-29th April 2012) received from licensed-traders for the month of April 2012]

Prepared on 9th May 2012

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Snapshot for April 2012

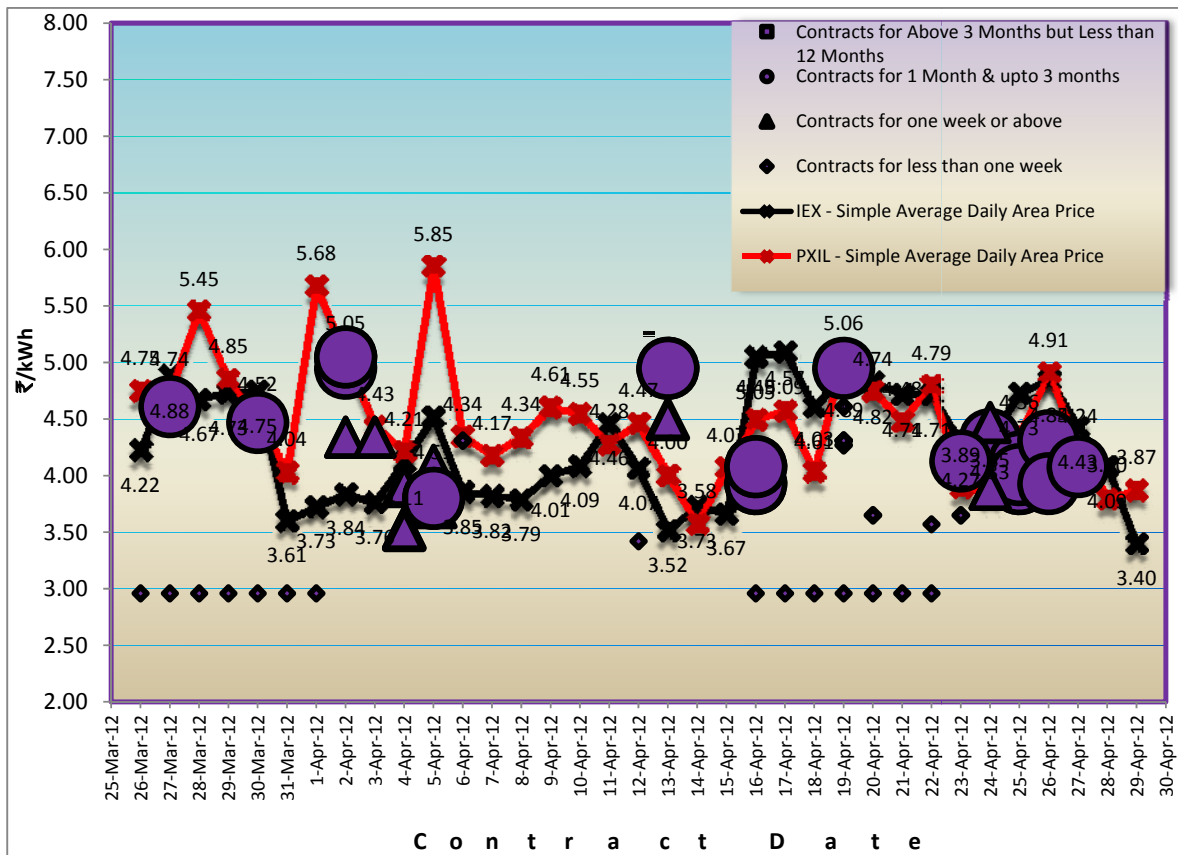
- ✓ The reported short-term contract volume for the month of April 2012 (analysis of five weeks) was 3240.76MUs whereas the same was 1647.71MUs for the month of March (analysis of four weeks). There is a 97% increase in reported contract-volume.
- ✓ 8% of total volume has been contracted at above price of ₹ 4/kWh.
- ✓ Total number of contracts (including Swap & Banking) in April (analysis of four weeks) was 132 by 5 traders whereas in March (analysis of four weeks) it was 110 by 3 traders.

Weekly Reporting of OTC Contracts: Monthly Analysis

I. Comparison of prices of Short Term OTC Contracts with Power Exchange Prices (on Contracted Date)

The scatter diagram shows a comparative analysis of price movement in both the OTC and Power Exchange markets for the period of 26th March - 29th April 2012. As is seen from the scatter diagram, most of the contracts were concentrated in the first and last week of the reported period and the price was in a range of ₹2.96/kWh to ₹5.05/ kWh. The contracts reported were mostly for less than a week (70 Contracts) and for a months and above (35 Contracts) period of power delivery. However there has been no contract signed for more than three months duration of power delivery.

Chart 1: Scatter Diagram depicting Price of Electricity for OTC contracts and in Power Exchanges



Note: It may be noted that Power Exchange is a day ahead market with standardized contracts and no transmission corridor assurance while the OTC Contracts are weekly/monthly contracts with flexibility of customization and corridor assurance. The price comparison of OTC- Contracts and Power Exchanges should be seen in this light.

Weekly Reporting of OTC Contracts: Monthly Analysis

The following table shows the weighted average sale prices of all the contracts reported on a particular week and total contracted volume for the same. (Weights being the respective contracted volume).

Table 1: Price and Volume of OTC Contracts

Weeks	Range of Sale Price (₹/ kWh)		Weighted Average of Sale Price (₹/ kWh)	Total Volume (MUs)
	Min	Max		
26 th Mar-1 st April	2.96	5.05	4.41	147.33
2 nd -8 th April	2.96	5.05	3.85	835.79
9 th -15 th April	2.96	4.95	4.32	5.07
16 th -22 nd April	2.96	4.95	4.44	198.77
23 rd -29 th April	3.65	4.47	4.10	851.26
Total	-			2038.22

Table 2: Comparison of Prices in Day Ahead Market with OTC Contracts

(Includes Term Ahead Contracts at Power Exchanges)

Contract Date (2012)	26th Mar.	27th Mar.	28th Mar.	29th Mar.	30th Mar.	31st Mar.	1st Apr.	2nd Apr.	3rd Apr.	4th Apr.	5th Apr.	6th Apr.	7th Apr.	8th Apr.	9th Apr.	10th Apr.	11th Apr.	12th Apr.	13th Apr.	14th Apr.	15th Apr.
IEX (₹/ kWh)	4.22	4.88	4.67	4.73	4.75	3.61	3.73	3.84	3.76	4.11	4.51	3.85	3.82	3.79	4.01	4.09	4.46	4.07	3.52	3.73	3.67
PXIL (₹/ kWh)	4.75	4.74	5.45	4.85	4.52	4.04	5.68	5.05	4.43	4.21	5.85	4.34	4.17	4.34	4.61	4.55	4.28	4.47	4.00	3.58	4.07
OTC Contracts (₹/ kWh)	4.41						3.85						4.32								
	26th Mar-1st April						2nd-8th April						9th-15th April								

Contract Date (2012)	16th Apr.	17th Apr.	18th Apr.	19th Apr.	20th Apr.	21st Apr.	22nd Apr.	23rd Apr.	24th Apr.	25th Apr.	26th Apr.	27th Apr.	28th Apr.	29th Apr.
IEX (₹/ kWh)	5.05	5.09	4.61	4.89	4.82	4.71	4.71	4.27	4.33	4.73	4.85	4.43	4.09	3.40
PXIL (₹/ kWh)	4.49	4.57	4.03	5.06	4.74	4.48	4.79	3.89	3.85	4.36	4.91	4.24	3.80	3.87
OTC Contracts (₹/ kWh)	4.44							4.10						
	16th-22nd April							23rd-29th April						

Source: Indian Energy Exchange & Power Exchange of India Ltd. Websites,

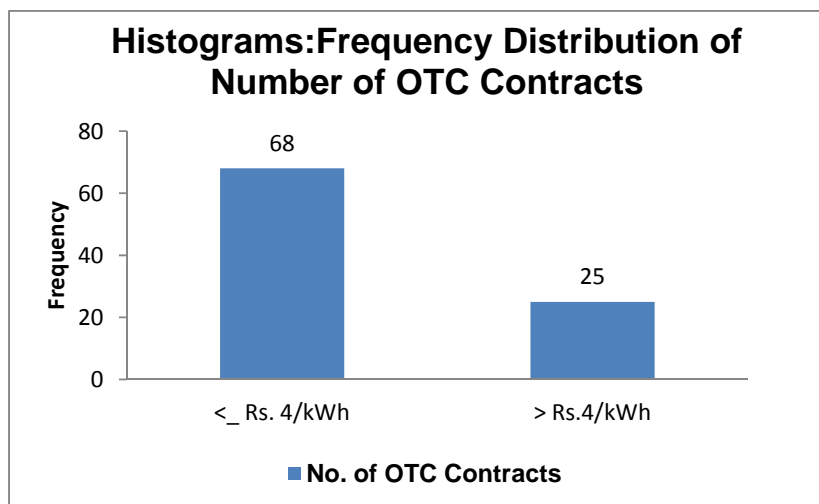
*: Simple Average Area Prices for the Day for all the Bid Areas

** : Weekly Weighted Average Prices for OTC- Contracts

Observations

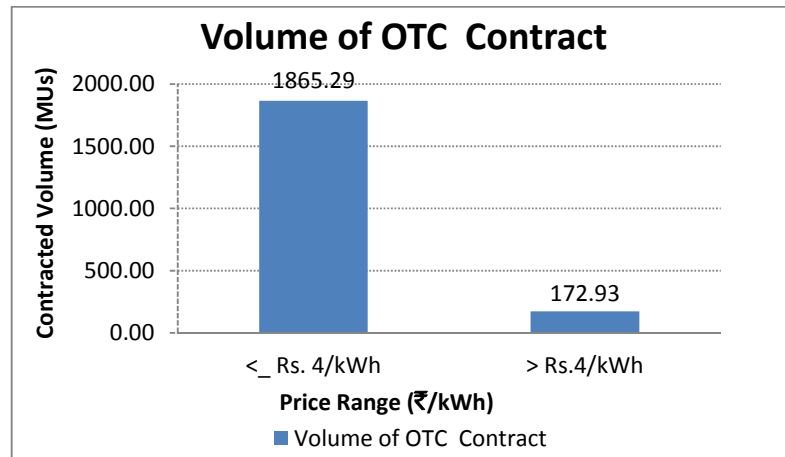
1. In the month of April, OTC contract prices were generally lower than the Indian Energy Exchange (IEX) and Power Exchange of India Ltd (PXIL) prices. It may be noted that Power Exchange is a day ahead market with standardized contracts and no transmission corridor assurance while the OTC Contracts are weekly/monthly contracts with flexibility of customization and transmission corridor assurance. The price comparison of OTC- Contracts and Power Exchanges should be seen in this light.
2. The minimum price in the exchanges during reported period was ₹3.40/kWh (IEX, 29th April) while that in the OTC market was ₹2.96/kWh (26th March-22April 2012). Maximum price in Day-Ahead market at the exchange reached ₹5.85/kWh (PXIL, 5th April) and in OTC Market it was ₹5.05/kWh (26th March) which was a 'RTC' power contract.
3. As far as the number of contracts is concerned, 25 out of totals 93* contracts were entered above ₹4/kWh. There were a total 132 contracts including swap & banking during the month. However, the cumulative volume traded above ₹4/kWh was 172.93* MUs which is 8% of total OTC contracts for the reported period 26th March - 29th April 2012.
4. There has been no contract signed for more than three months duration of power delivery.

Chart 2: Histogram of Number of OTC Contracts



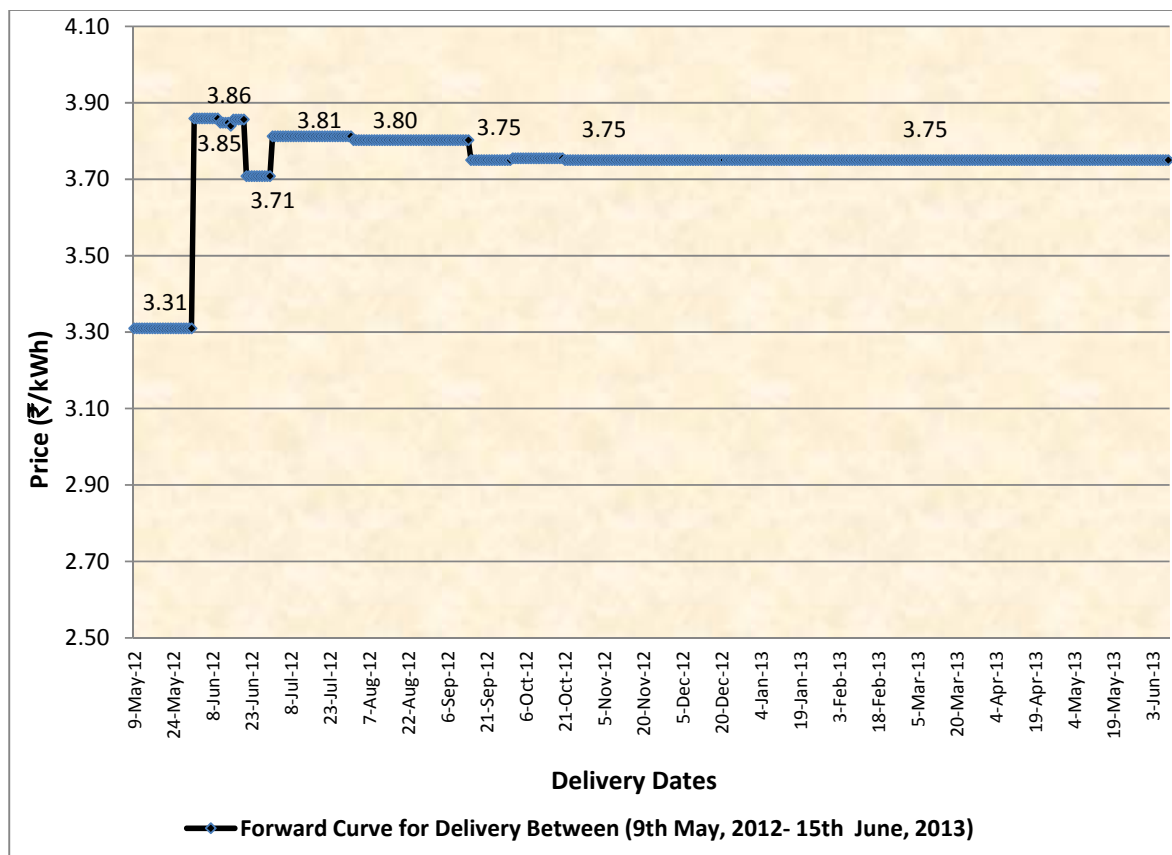
* Excluding swap /banking contracts since they do not have any sale price.

Chart 3: Cumulative Volume Traded below and above ₹ 4/kWh during 26th March - 29th April 2012



II. Forward Curve of Power Prices

Chart 4: Forward Curve for 9th May 2012 - 15th June 2013



A forward curve reflects present day's expectation of spot prices for a future period. Accordingly a forward curve has been drawn based on prices of contracts executed now for supply of power from 9th May 2012 - 15th June 2013, i.e. thirteen months ahead period of power supply. This forward curve is as on 9th May 2012 but based on 93 contract prices reported by trader's upto 29th April 2012.

Observations

1. The forward curve for the next thirteen months period i.e. 9th May 2012 - 15th June 2013 generally followed a rising trend till end of May 2012 and thereafter remained flat till June 2013, with some minor variations.
2. The Forward Curve has been formulated for a period of thirteen months based on reported contracts (for 9th May 2012 - 15th June 2013 period of power delivery). The numbers of contracts reported for the initial months (May and June 2012) were higher

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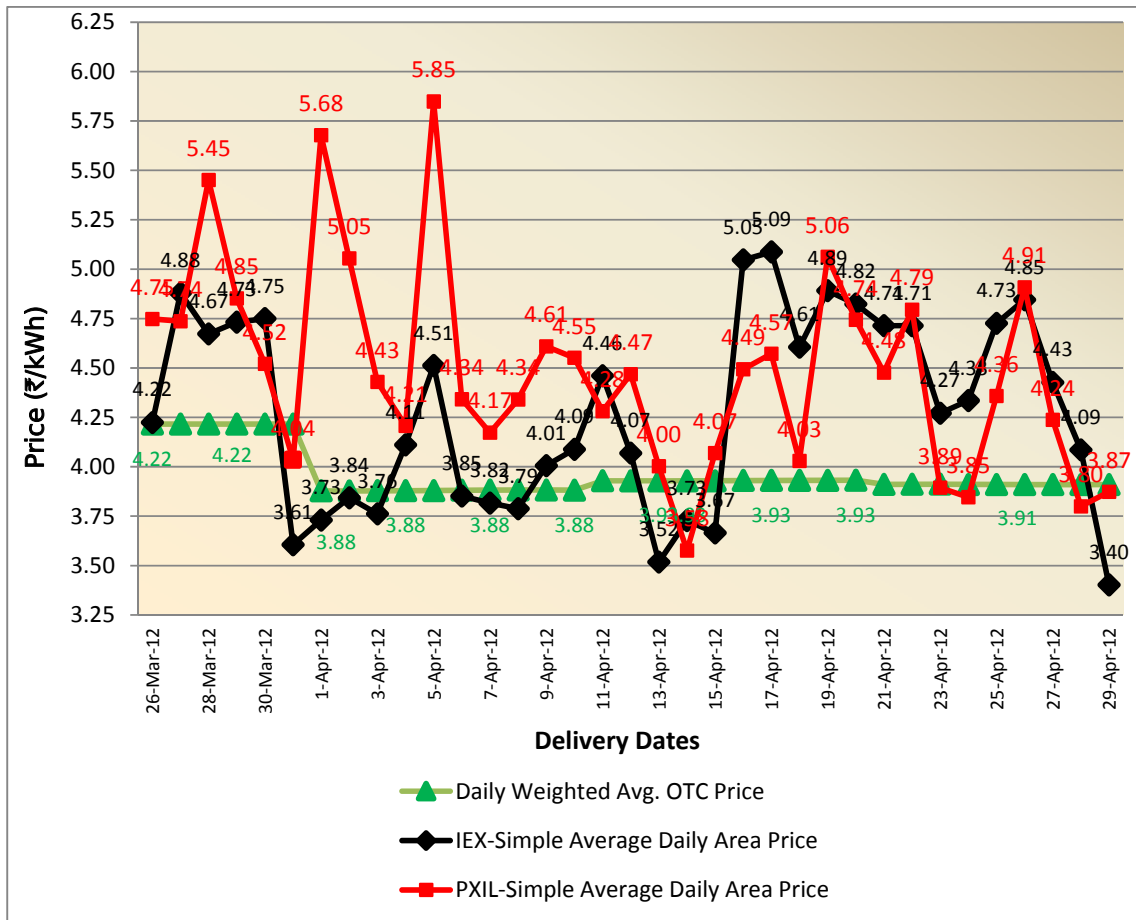
(35 to 7 contracts) than those of later months; April to June 2013 (1 or 2 contracts). It is in alignment with the general trend that liquidity is higher for nearer months compared to farther months.

III. Post-facto Comparison of Prices in OTC Contracts and Power Exchanges (on Power Delivery Dates)

The post facto graph shows the average OTC price vis-à-vis power exchanges prices for the last month's power deliveries. Hence this compares the spot delivered prices with OTC deliveries (OTC contracts may have been executed earlier but delivered on these same days). The process of calculating the data points is same as in the forward curve.

It is observed that IEX and PXIL prices were above the average OTC contract prices except at the end of the reported period.

Chart 5: Comparison OTC deliveries and Power Exchange Spot Delivery Price for April 2012



Observations

1. The Post-Facto graph shows that generally power exchanges' prices remained higher than OTC-contracts' prices during the reported period. It may be noted that Power Exchange is a day ahead market with standardized contracts with no transmission corridor assurance while the OTC - Contracts are weekly/monthly contracts with flexibility of customization and transmission corridor assurance. The price comparison of OTC- Contracts and Power Exchanges should be seen in this light.

Overall Comparative View between March and April 2012

Following table shows the number of contracts reported during March and April 2012 categorized according to the period of power supply.

Table 3: Number of Contracts Reported in March and April 2012^ψ

	Mar-12 (four weeks)	Apr-12 (five weeks)
Above three months and upto 12 months	0	1
One month or above	26	34
One week or above	10	27
Less than a week	74	70
Total	110	132

From the above table it is clear that the total numbers of contracts for power deliveries for the category one month or above; were more in April (35 Contracts) than in March (26 Contracts).

^ψ Including swap/banking contracts between different DISCOMS

A comparative table to represent maximum and minimum prices at both the exchanges vis-à-vis OTC contracts prices is given below:

Table 3: Maximum and Minimum Prices - A Comparative View ₹/ kWh (Dates)

	March 2012 (27th February - 25th March)		April 2012 (26th March - 29th April)	
	Maximum	Minimum	Maximum	Minimum
IEX	5.11 (24 th March)	2.79 (8 th March)	5.09 (17th April)	3.40 (29th April)
PXIL	4.70 (25 th March)	2.84 (8 th March)	5.85 (5th April)	3.58 (14th April)
OTC Contracts	5.49 (6 th March)	2.96(27 th February - 24 th March)	5.05 (26th March ,2nd April)	2.96 (26th March-22nd April)

Overall inferences

1. From Chart-1 i.e. Comparison of prices of Short Term OTC Contracts with Power Exchange Prices (on Contracted Date), it is observed that for most of OTC contract prices were lower than the IEX and PXIL spot prices during the month. It may be noted that Power Exchange is a day ahead market with standardized contracts with no transmission corridor assurance while the OTC - Contracts are weekly/monthly contracts with flexibility of customization and corridor assurance. The price comparison of OTC- Contracts and Power Exchanges should be seen in this light.
2. 8% of total volume has been contracted at above price of ₹ 4/kWh.
3. It is also seen that there have been a large number (70) of contracts for less than week period of delivery in the reported period.
4. The forward curve is generally flat from July 2012 to June 2013.

Annexure-I

**Table 4: List of Trading Licensees who have undertaken Contracts in
the period 26th March – 29th April 2012***

Sr.No.	Name of Licensee	26th Mar- 1st April	2nd-8th April	9th-15th April	16th-22nd April	23rd-29th April
1	PTC India Ltd.	Y(22)	Y(19)	Y(13)	Y(9)	NIL
2	NTPC Vidyut Vyapar Nigam Ltd.	Y(12)	Y(4)	Y(4)	Y(16)	Y(16)
3	GMR Energy Trading Ltd.	NIL	Y(4)	NIL	Y(5)	NIL
4	Adani Enterprises Ltd.	NIL	Y(4)	NIL	NIL	Y(1)
5	National Energy Trading & Services Ltd.	NIL	NIL	Y(2)	NIL	Y(1)
Total No. of Contracts		34	31	19	30	18
Total for month for all traders		132				

Note 1: Y(): Contracts had been struck (Number of Contracts)


NIL: No Contracts was made during the week

NR: Not Reported

*Note 2: This table shows list of traders who have reported & undertaken at least one contracts during the reported period. There could be some traders who have reported but did not undertake any contracts.

Annexure-II

I. The Scatter Diagram: Comparison of prices of Short Term OTC Contracts with Power Exchange Prices (on Contracted Date)

 *Process of Formulation:* The scatter diagram represents the details of OTC contracts undertaken by traders during any particular time period (e.g. for last four or five weeks) for short-term (upto less than a year) transactions of electricity. Each data-point represents contract sale-price on a particular contract date.

The varied shapes are to depict contracts for different time-span, e.g. the squares are for contracts of more than three months but less than a year, largest circles are for contracts which have been made for one or upto three months ahead, the triangles are to represent contracts made for a week or more but for less than one month and smallest ones (daimond shaped) are for one day or more but less than a week period of contracts. In this diagram, no distinction has been made among the traders. The black and red markers connected with lines show the spot prices at the two power exchanges, viz. the Indian Energy Exchange (IEX) and the Power Exchange of India Ltd. (PXIL) on the respective contract dates.

II. The Forward Curve of Power Price

 *Process of Formulation*

The forward curve has been made based on OTC sale prices reported every week by the traders. For a contract of a full month, the average monthly contract price is considered discretely as the price for each day. Finally, the average daily price for the forward curve is the weighted average daily price for all contracts existing in these days. (Weights being the respective contracted daily volume).

III. The Post-Facto Graph: Post-facto Comparison of Prices in OTC Contracts and Power Exchanges (on Power Delivery Dates)

 *Process of Formulation*

The post facto graph shows the average OTC price vis-à-vis power exchanges prices for the last month's power deliveries. Hence this compares the spot delivered prices with OTC deliveries (OTC contracts may have been executed earlier but delivered on

these same days). The process of calculating the data points is same as in the forwards curve.

IV. The difference between Scatter Diagram and Post Facto Graph is as follows:

- a) The scatter diagram represents the details of OTC contracts undertaken by traders during any particular time period (e.g. for last five weeks) for short-term (upto less than a year) transactions of electricity. Each data-point represents contract sale-price on a particular contract date.
 - b) The post facto graph shows the average OTC price vis-à-vis power exchanges prices for the last month's power deliveries. It gives a comparison between the spot delivered prices and OTC deliveries (OTC contracts may have been executed earlier but delivered on these same.
- V. The 24 hour simple average prices of the 12 bid areas is being termed as simple average daily area price. The Power Exchanges' prices used in the report are calculated using following formulas:

Hourly Average (Hn) = $(A1+ A2+ E1+E2+N1+N2+N3+W1+W2+W3+S1+S2) /12$
for Hour 1 to 24

Simple Average Area Price = $(H1 + H2 + \dots + H23+ H24) / 24$ for the full day.