WEEKLY REPORTING OF OTC CONTRACTS: MONTHLY ANALYSIS

(MAY 2012)

[An analysis of all weekly reports (reporting period 30th April – 3rd June 2012) received from licensed-traders for the month of May 2012]

Prepared on 13th June 2012

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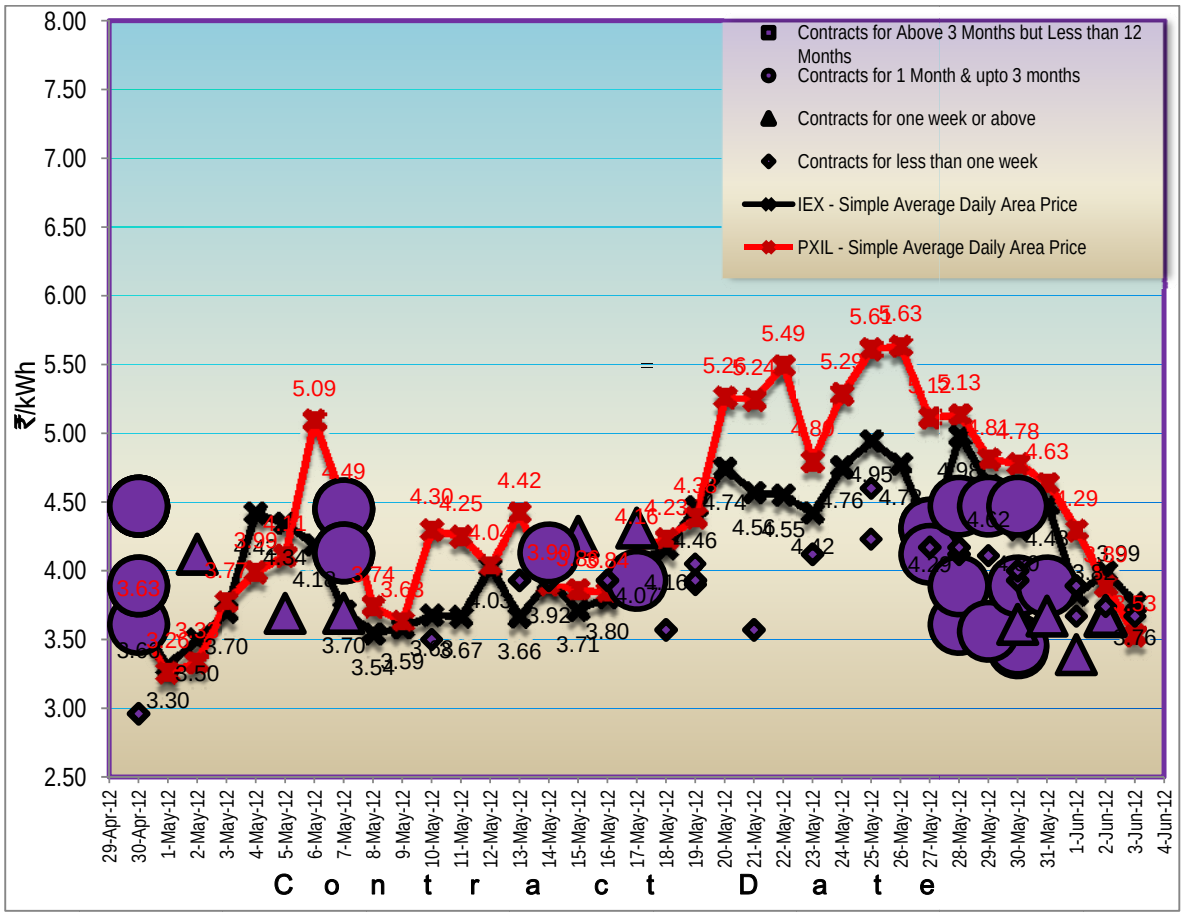
Snapshot for May 2012

- ✓ The reported short-term contract volume for the month of May 2012 (analysis of five weeks) was 2744.28MUs whereas the same was 3240.76MUs for the month of April (analysis of five weeks). There is a 15% decrease in reported contract-volume.
- ✓ 37% of total volume has been contracted at above price of ₹ 4/kWh as compared to 8% during April 2012.
- ✓ Total number of contracts (including Swap & Banking) in May (analysis of five weeks) was 100 by 8 traders whereas in April (analysis of five weeks) it was 132 by 5 traders.

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 30th April – 3rd June 2012. As is seen from the scatter diagram, most of the contracts were concentrated in the last week of the reported period and the overall price was in a range of ₹2.96/kWh to ₹4.47/ kWh. The contracts reported were mostly for less than a week (46 Contracts) and for a months and above (34 Contracts) period of power delivery. 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.

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.		
30th Apr-6th May	2.96	4.47	4.04	703.67
7th -13th May	3.50	4.45	4.25	99.57
14th-20th May	3.57	4.31	4.07	151.03
21st -27th May	3.57	4.60	4.27	186.18
28th May-3rd Jun	3.39	4.47	3.88	1144.31
Total	-			**2284.76**

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

(Includes Term Ahead Contracts at Power Exchanges)

Contract Date (2012)	30th April	1st May	2nd May	3rd May	4th May	5th May	6th May	7th May	8th May	9th May	10th May	11th May	12th May	13th May	14th May	15th May	16th May	17th May	18th May	19th May	20th May
IEX* (₹ / kWh)	3.66	3.30	3.50	3.70	4.42	4.34	4.18	3.70	3.54	3.59	3.68	3.67	4.03	3.66	3.92	3.71	3.80	4.07	4.16	4.46	4.74
PXIL* (₹ / kWh)	3.63	3.26	3.33	3.77	3.99	4.11	5.09	4.49	3.74	3.63	4.30	4.25	4.04	4.42	3.90	3.86	3.84	4.16	4.23	4.38	5.26
OTC Contracts** (₹/ kWh)	4.04							4.25							**4.07**						
	30th April- 6th May							7th - 13th May							14th - 20th May						

Contract Date (2012)	21st May	22nd May	23rd May	24th May	25th May	26th May	27th May	28th May	29th May	30th May	31st May	1st June	2nd June	3rd June
IEX* (₹ / kWh)	4.56	4.55	4.42	4.76	4.95	4.78	4.29	4.98	4.62	4.30	4.48	3.82	3.99	3.76
PXIL* (₹ / kWh)	5.24	5.49	4.80	5.29	5.61	5.63	5.12	5.13	4.81	4.78	4.63	4.29	3.89	3.53
OTC Contracts** (₹/ kWh)	4.27							3.88						
	21st - 27th May							28th May - 3rd June						

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*

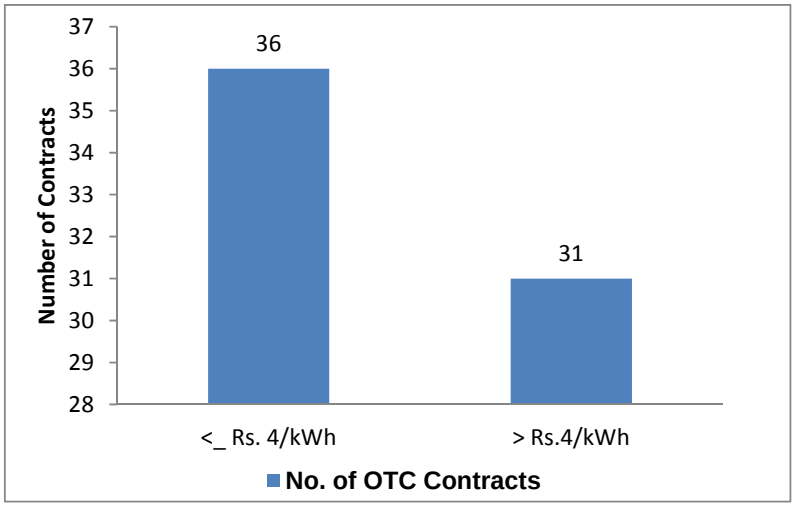
Observations

1. In the month of May, 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 ₹3.26/kWh (PXIL, 1st May) while that in the OTC market was ₹2.96/kWh (30th April 2012). Maximum price in Day-Ahead market at the exchange reached ₹5.63/kWh (PXIL, 26th May) and in OTC Market it was ₹4.47 (30th April, 28-30th May) which was a 'RTC' power contract.

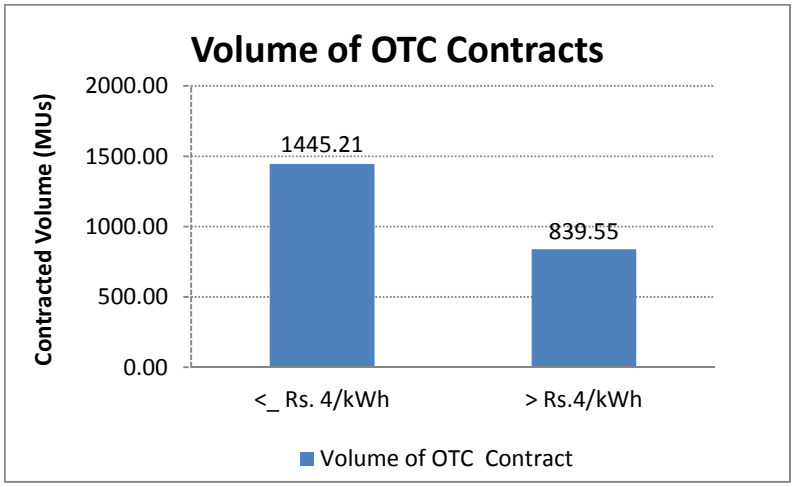
3. As far as the number of contracts is concerned, 31 out of totals 67♣ contracts were entered at above ₹4/kWh. There were a total 100 contracts including swap & banking during the month. However, the cumulative volume traded above ₹4/kWh was 839.55♣ MUs which is 37% of total OTC contracts for the reported period 30th April – 3rd June 2012.

Chart 2: Frequency Distribution of Number of OTC Contracts



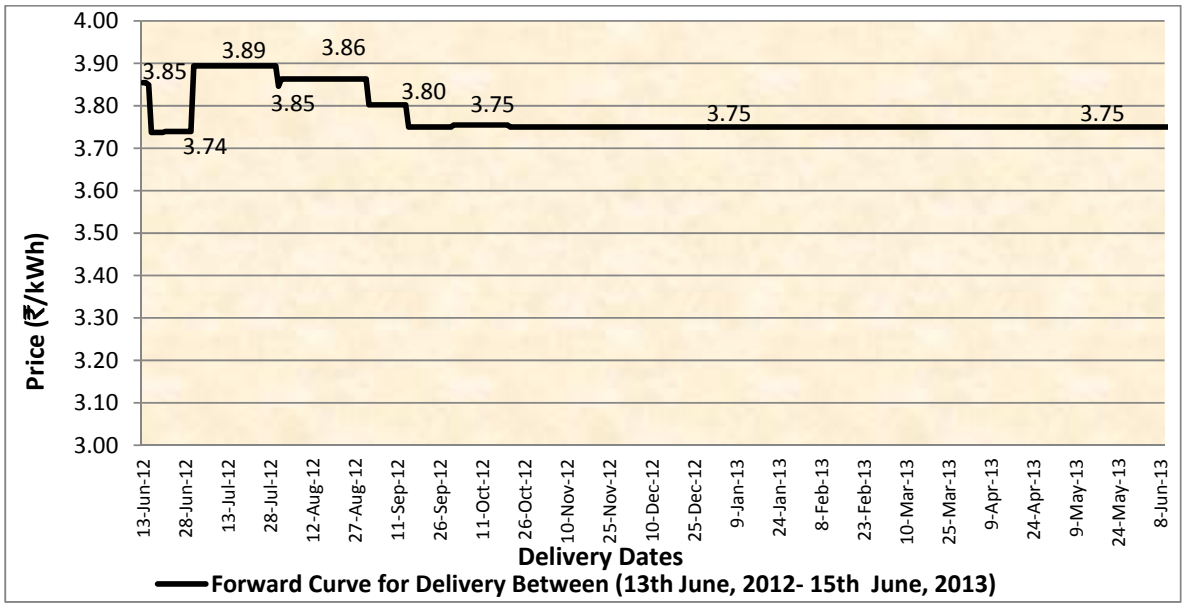
♣ *Excluding swap /banking contracts since they do not have any sale price.*

Chart 3: Cumulative Volume Traded below and above ₹4/kWh 30th April – 3rd June 2012



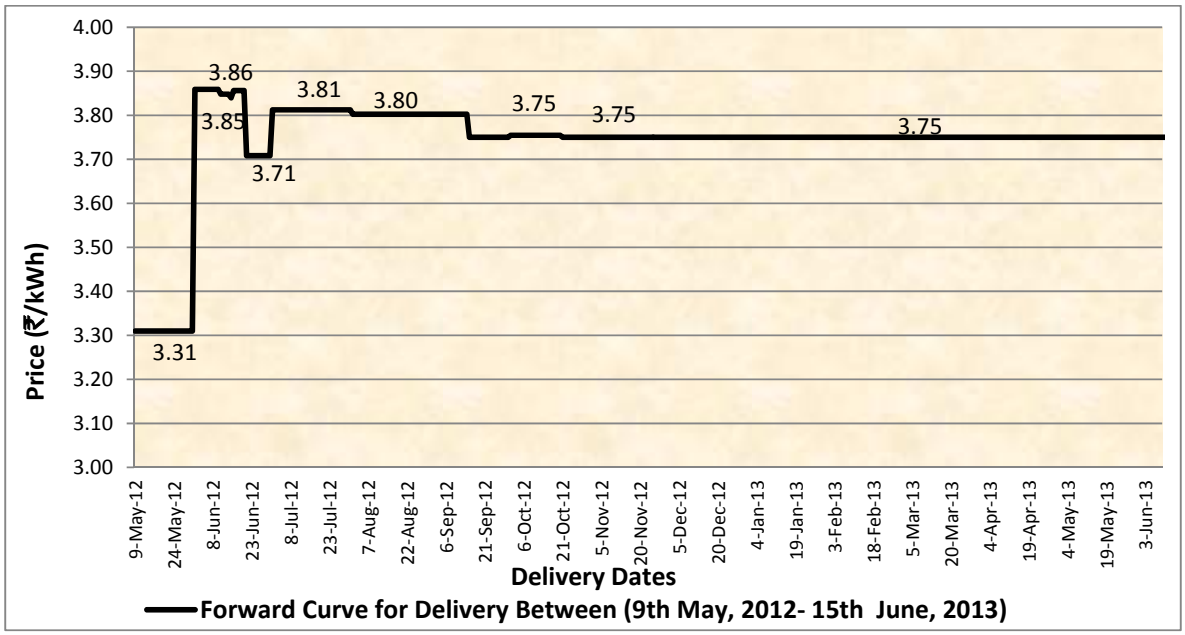
II. Forward Curve of Power Prices

Chart 4: Forward Curve for the period June 2012 - June 2013 as on 13th June 2012



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 13th June 2012 - 15th June 2013, i.e. twelve months ahead period of power supply. This forward curve is as on 13th June 2012 but based on 67 contract prices reported by trader's upto 3rd June 2012.

Chart 4.1: Forward Curve for the period May 2012 - June 2013 as on 9th May 2012



Observations

1. The Forward Curve for the next twelve months period i.e. June 2012 - June 2013 as on 13th June 2012 initially followed a declining trend till end of June 2012 then rising trend during July 2012 and thereafter remained flat till June 2013, with some minor variations.

2. The Forward Curve as on 13th June 2012 has been formulated for a period of twelve months based on reported contracts (for 13th June 2012 - 15th June 2013 period of power delivery). The numbers of contracts reported for the initial months (June and July 2012) were higher (22 to 11 contracts) than those of later months i.e. September 2012 to June 2013. It is in alignment with the general trend that liquidity is higher for nearer months compared to farther months.

3. A comparison of forward curves (Chart 4 & Chart 4.1) gives us a picture of expected delivery price for June 2012 as on 9th May (Chart 4.1) and as on 13th June (Chart 4). It is possible that the prices for the same delivery period are different during different periods of time which gets captured in this comparison.

4. The prices for expected delivery for June has marginally decreased from ₹3.86/kWh (contracts executed up to 9th May, 2012) to ₹3.74/kWh (contracts executed up to 13th June, 2012).

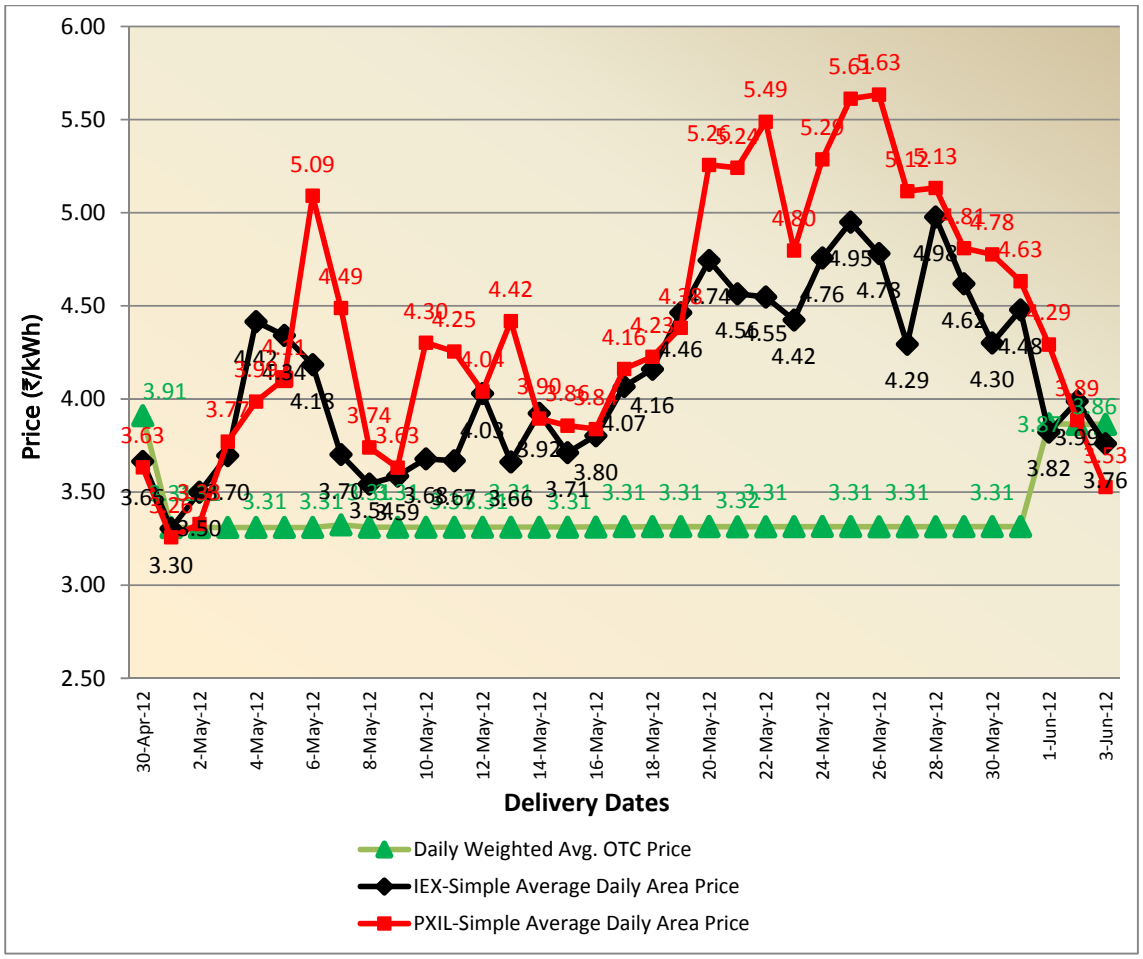
5. Similarly the expected delivery prices for July 2012 have marginally increased from ₹3.81 (contracts executed up to 9th May, 2012) to ₹3.89/kWh (contracts executed up to 13th June, 2012).

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 May 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 April and May 2012

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

Table 3: Number of Contracts Reported in April and May 2012[Ψ]

	April-12 (five weeks)	May-12 (five weeks)
Above three months and upto 12 months	1	0
One month or above	34	34
One week or above	27	20
Less than a week	70	46
Total	**132**	**100**

From the above table it is clear that the total numbers of contracts for power deliveries for the category one month or above; were lesser in May (34 Contracts) than in April (35 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 4: Maximum and Minimum Prices - A Comparative View ₹/ kWh (Dates)

	April 2012 (26th March - 29th April)		May 2012 (30th April- 3rd June)	
	Maximum	Minimum	Maximum	Minimum
IEX	5.09 (17th April)	3.40 (29th April)	4.98 (28th May)	3.30 (1st May)
PXIL	5.85 (5th April)	3.58 (14th April)	5.63 (26th May)	3.26 (1st May)
OTC Contracts	5.05 (26th March, 2nd April)	2.96 (26th March-22nd April)	4.47 (30th April, 28-30th May)	2.96 (30th 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. 37% of total volume has been contracted at above price of ₹ 4/kWh.
3. The forward curve as on 13th June 2012 looks flat for a period from September 2012 to June 2013.

Annexure-I

Table 5: List of Trading Licensees who have undertaken Contracts in the period 30th April – 3rd June 2012*

Sr.No.	Name of Licensee	30th April - 6th May	7th - 13th May	14th - 20th May	21st - 27th May	28th May - 3rd June
1	PTC India Ltd.	Y(4)	Y(8)	Y(5)	Y(1)	Y(13)
2	NTPC Vidyut Vyapar Nigam Ltd.	Y(10)	Y(7)	Y(9)	Y(10)	Y(19)
3	GMR Energy Trading Ltd.	NIL	NIL	Y(2)	NIL	NIL
4	Adani Enterprises Ltd.	NIL	NIL	Y(1)	NIL	NIL
5	Reliance Energy Trading Ltd.	NIL	NIL	Y(2)	NIL	NIL
6	Jaiprakash Associates Limited	NIL	Y(2)	NIL	Y(3)	NIL
7	Shree Cement Ltd.	NIL	NIL	NIL	NIL	Y(3)
8	RPG Power Trading. Co. Ltd.	NIL	NIL	NIL	NIL	Y(1)
Total No. of Contracts		14	17	19	14	36
Total for month for all traders		100				

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.*

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 96 Blocks (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 +... +H23+ H24) / 24 for the full day.