

# WEEKLY REPORTING OF OTC CONTRACTS: MONTHLY ANALYSIS (JULY 2013)

[An analysis of all weekly reports (reported period 1<sup>st</sup> July- 28<sup>th</sup> July 2013) for the month of July 2013 received from licensed-traders]



Economics and Power Market Division  
Market Monitoring Cell  
Central Electricity Regulatory Commission

Prepared on 8<sup>th</sup> August 2013

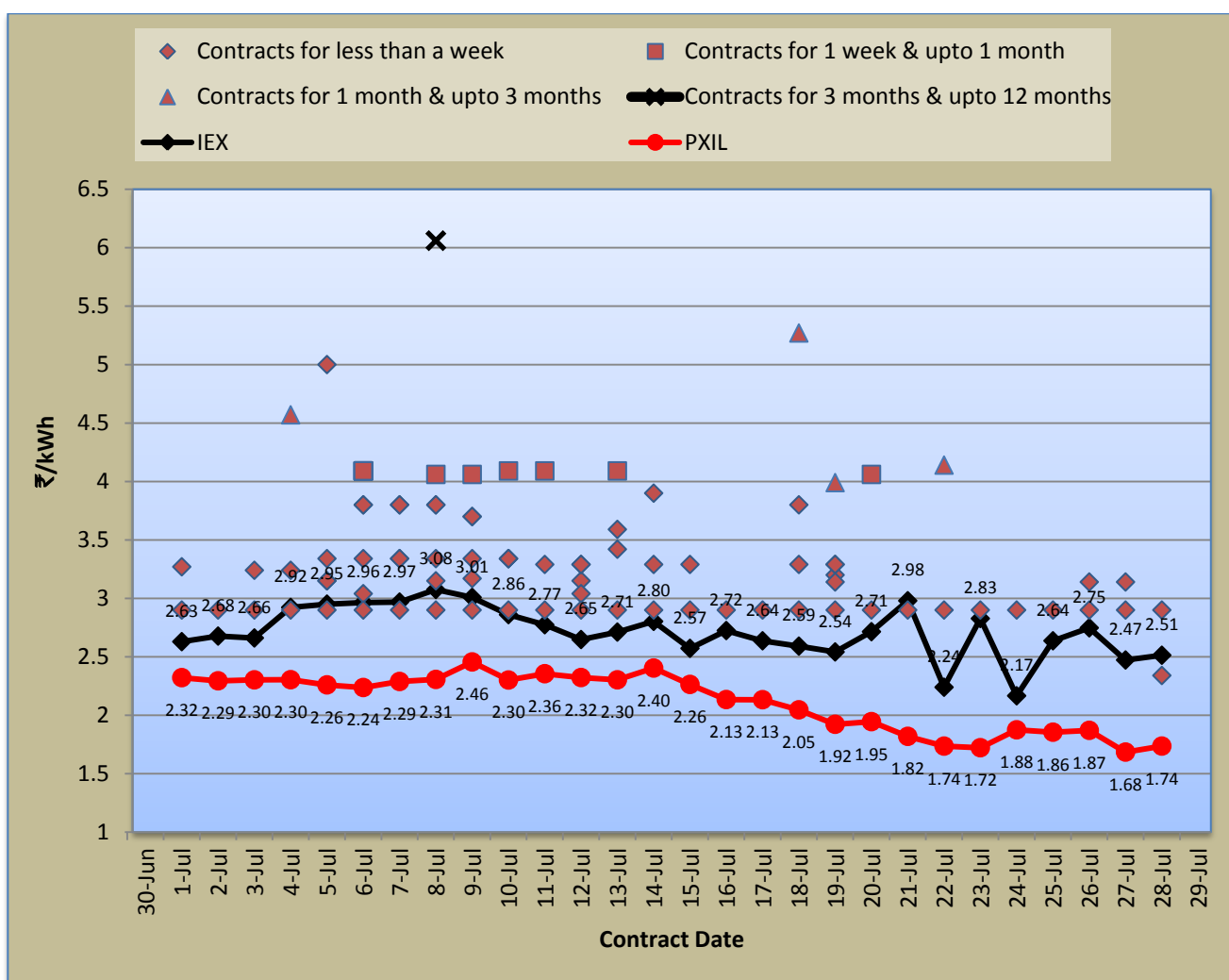
#### Snapshot for July 2013 (1st July – 28th July, 2013)

- ✓ The reported short-term contract volume for the month of July (analysis of four weeks) is 1686.91 MUs whereas the same was 3234.67 MUs for the month of June (analysis of five weeks). This is equivalent to 35% decrease in reported average weekly volume transacted in July.
- ✓ 92% of total volume has been contracted at above price of ₹4/kWh as compared to 75% during June 2013.
- ✓ Total number of contracts (including Swap & Banking) in July (analysis of four weeks) was 97 by 7 traders whereas in June (analysis of five weeks) was 133 by 8 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 OTC and Power Exchange markets for the period of 1<sup>st</sup> July – 28<sup>th</sup> July 2013. As seen in scatter diagram, the contracts were clustered over the end of 1<sup>st</sup> week & the entire 2<sup>nd</sup> week of the reported period and the overall price of OTC contracts was in the range of ₹2.34/kWh - ₹6.06/kWh.

**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 with no transmission corridor reservation while the OTC Contracts are weekly/monthly contracts with flexibility of customization and corridor reservation. 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 by traders in a particular week and total contracted volume for the same. (Weights being the respective contracted volume).

**Table I: Price and Volume of OTC Contracts**

Week of Contracts Execution	Range of Sale Price (₹/kWh)		Weighted Average of Sale Price (₹/kWh)	Total Volume (MUs)
	Min	Max		
1 <sup>st</sup> July - 7 <sup>th</sup> July 2013	2.9	5	4.15	308.12
8 <sup>th</sup> July - 14 <sup>th</sup> July 2013	2.9	6.06	5.67	878.45
15 <sup>th</sup> July - 21 <sup>st</sup> July 2013	2.9	5.27	4.83	221.54
22 <sup>nd</sup> July - 28 <sup>th</sup> July 2013	2.34	4.14	4.11	190.28
Total				1598.39

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

Contract Date	1-Jul-13	2-Jul-13	3-Jul-13	4-Jul-13	5-Jul-13	6-Jul-13	7-Jul-13	8-Jul-13	9-Jul-13	10-Jul-13	11-Jul-13	12-Jul-13	13-Jul-13	14-Jul-13
IEX (₹/kWh)	2.63	2.68	2.66	2.92	2.95	2.96	2.97	3.08	3.01	2.86	2.77	2.65	2.71	2.80
PXIL (₹/kWh)	2.32	2.29	2.30	2.30	2.26	2.24	2.29	2.31	2.46	2.30	2.36	2.32	2.30	2.40
OTC Contracts (₹/kWh)	4.15 (1 <sup>st</sup> July 2013 - 7 <sup>th</sup> July 2013)							5.67 (8 <sup>th</sup> July 2013 - 14 <sup>th</sup> July 2013)						

Contract Date	15-Jul-13	16-Jul-13	17-Jul-13	18-Jul-13	19-Jul-13	20-Jul-13	21-Jul-13	22-Jul-13	23-Jul-13	24-Jul-13	25-Jul-13	26-Jul-13	27-Jul-13	28-Jul-13
IEX (₹/kWh)	2.57	2.72	2.64	2.59	2.54	2.71	2.98	2.24	2.83	2.17	2.64	2.75	2.47	2.51
PXIL (₹/kWh)	2.26	2.13	2.13	2.05	1.92	1.95	1.82	1.74	1.72	1.88	1.86	1.87	1.68	1.74
OTC Contracts (₹/kWh)	4.83 (15 <sup>th</sup> July 2013 - 21 <sup>st</sup> July 2013)							4.11 (22 <sup>nd</sup> July 2013 - 28 <sup>th</sup> July 2013)						

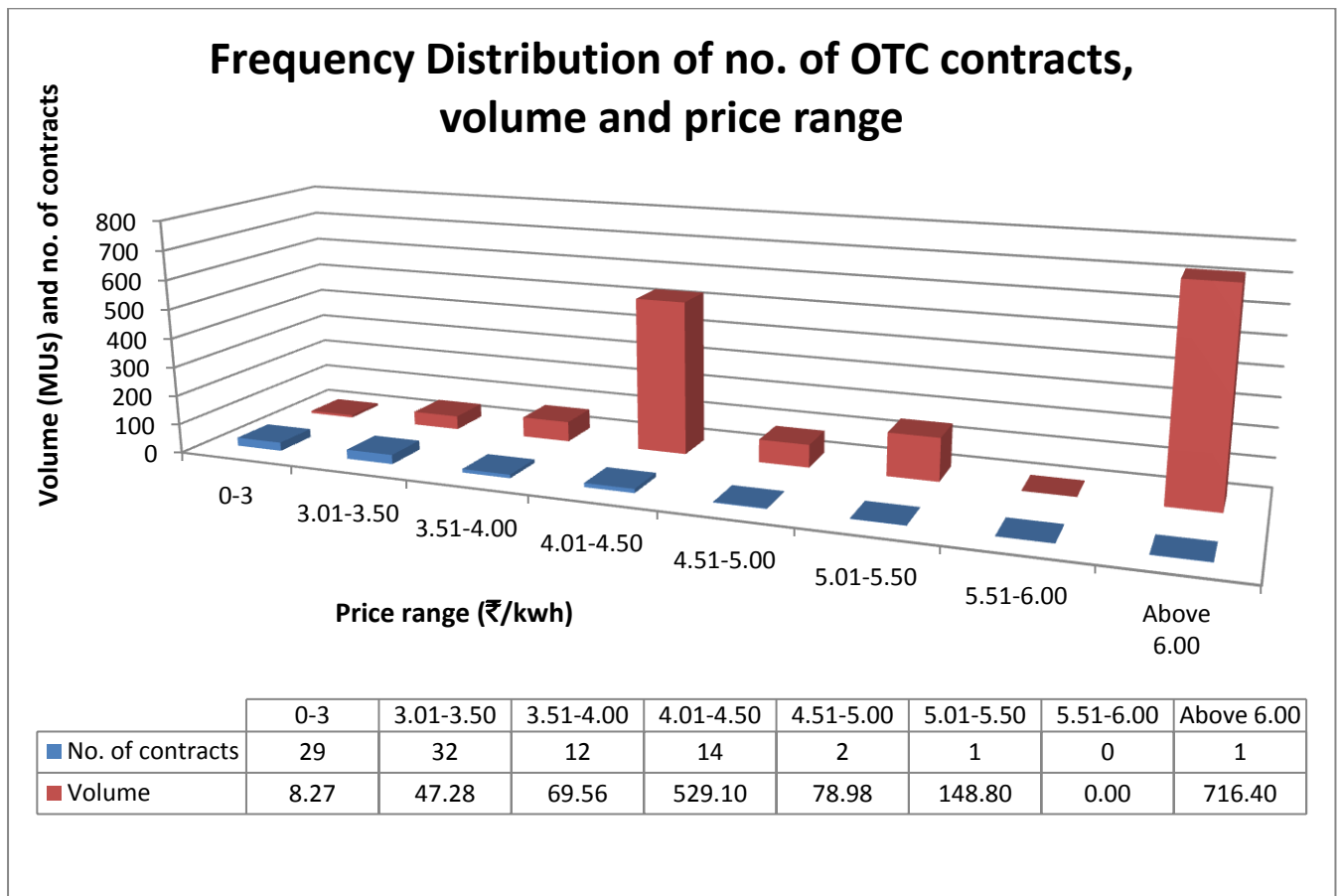
## Observations

1. It is observed that OTC contract prices were higher than the IEX and PXIL prices during the reported period. The minimum price in OTC market was ₹2.34/kWh (contracts from 1<sup>st</sup> July - 28<sup>th</sup> July 2013) while in the exchanges (24 hour average price) it was ₹1.68/kWh (PXIL, 27<sup>th</sup> July 2013) during reported period and the maximum price in OTC market was ₹6.06/kWh (8<sup>th</sup> July 2013) which was a 'RTC'

power contract while for Day-Ahead market at the exchange it was ₹3.08/kWh (IEX, 8<sup>th</sup> July 2013). (It may be noted that Power Exchange is a day ahead market with standardized contracts with no transmission corridor reservation while the OTC Contracts are weekly/monthly contracts with flexibility of customization and transmission corridor reservation. The price comparison of OTC - Contracts and Power Exchanges should be seen in this light.)

- As far as the number of contracts is concerned, 18 out of totals 91\* contracts were entered at above ₹4/kWh. However, the cumulative volume traded above ₹4/kWh was 1473.28\* MUs which is 92% of total OTC contracts for the reported period 1<sup>st</sup> July – 28<sup>th</sup> July 2013. There were a total 97 contracts including swap & banking during the reported period.

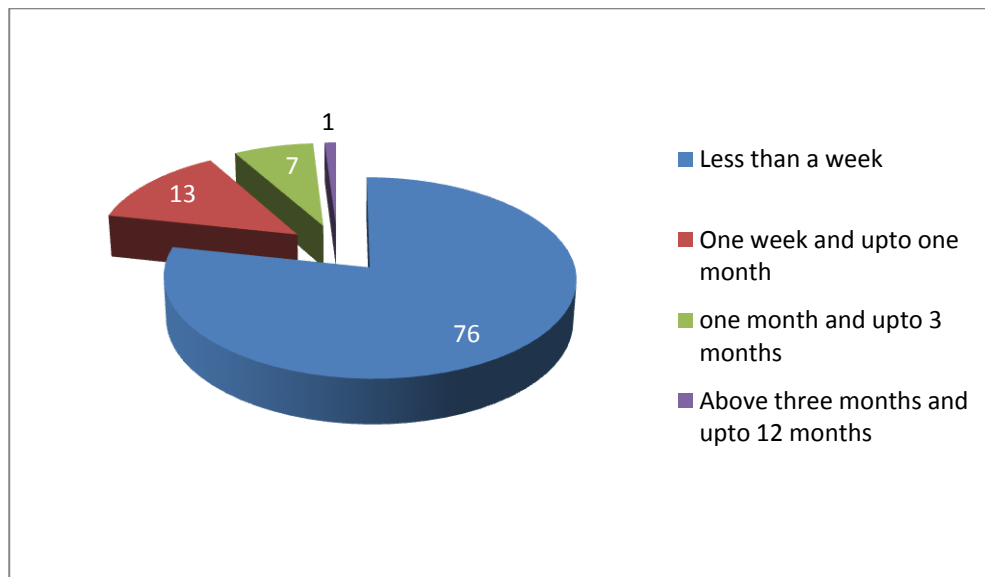
**Chart 2: Frequency Distribution of Number of OTC Contracts, Volume and Price Range**



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

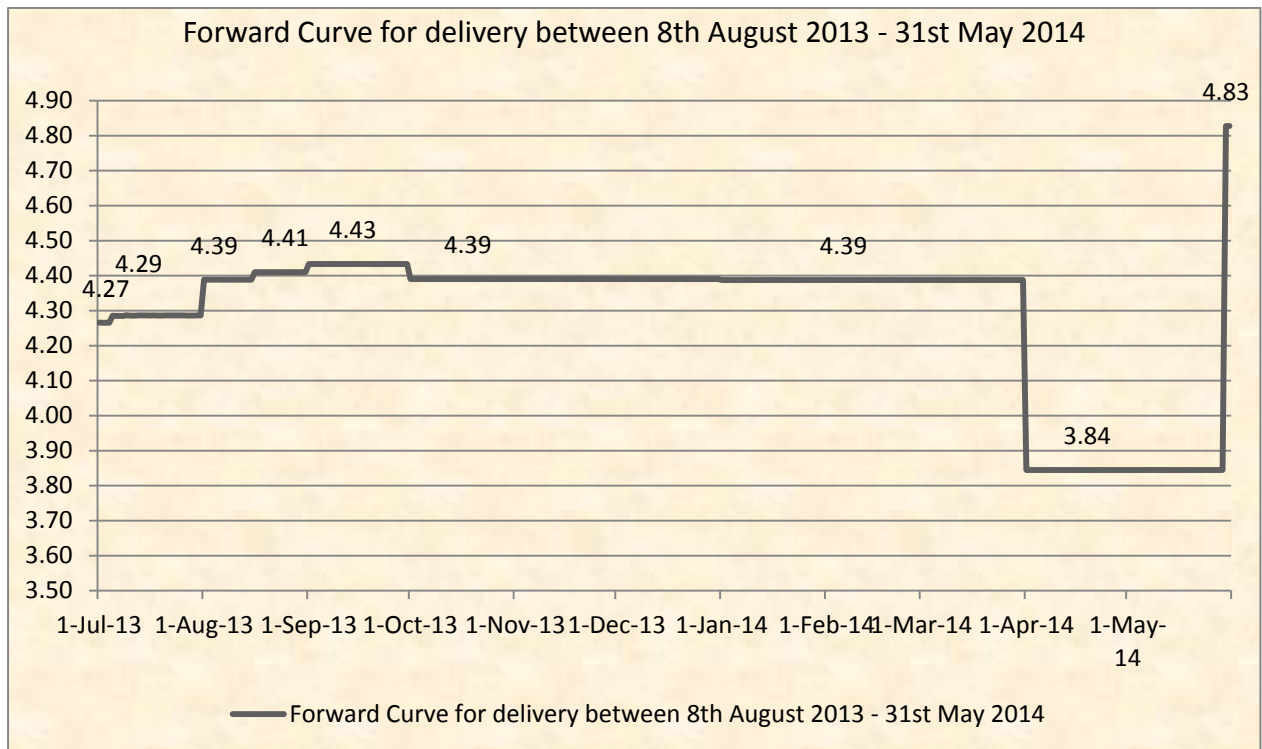
3. The following chart shows the number of contracts reported during the aforesaid period, categorized according to the period of power supply. Total number of contracts reported is 97.

**Chart 3: Number of Contracts Reported during 1<sup>st</sup> July – 28<sup>th</sup> July 2013**



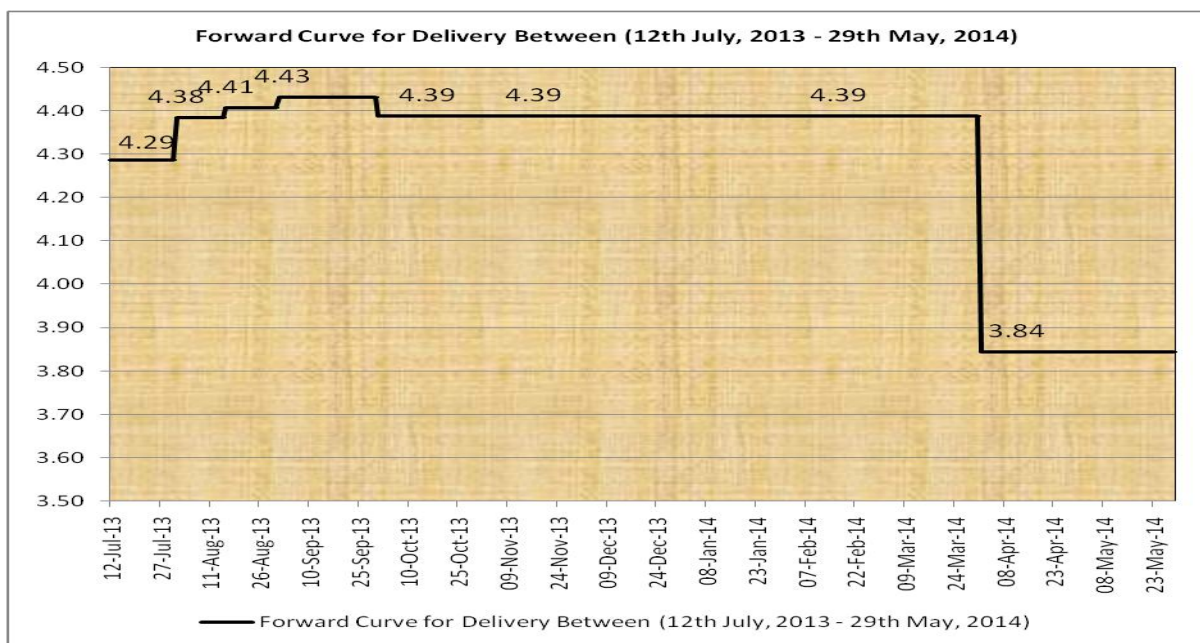
## II. Forward Curve of Power Prices

Chart 4.1: Forward Curve for the period 8<sup>th</sup> August 2013 – 31<sup>st</sup> May 2014 as on 8<sup>th</sup> August, 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 for future period. . This forward curve is as on 8<sup>th</sup> August 2013 based on 91 contract prices reported by traders up to 28<sup>th</sup> July 2013.

Chart 4.2: Forward Curve for the period July 2013 – May 2014 as on 12<sup>th</sup> July, 2013



This forward curve is as on 12<sup>th</sup> July 2013 based on 113 contract prices reported by traders up to 30<sup>th</sup> June 2013.

## Observations

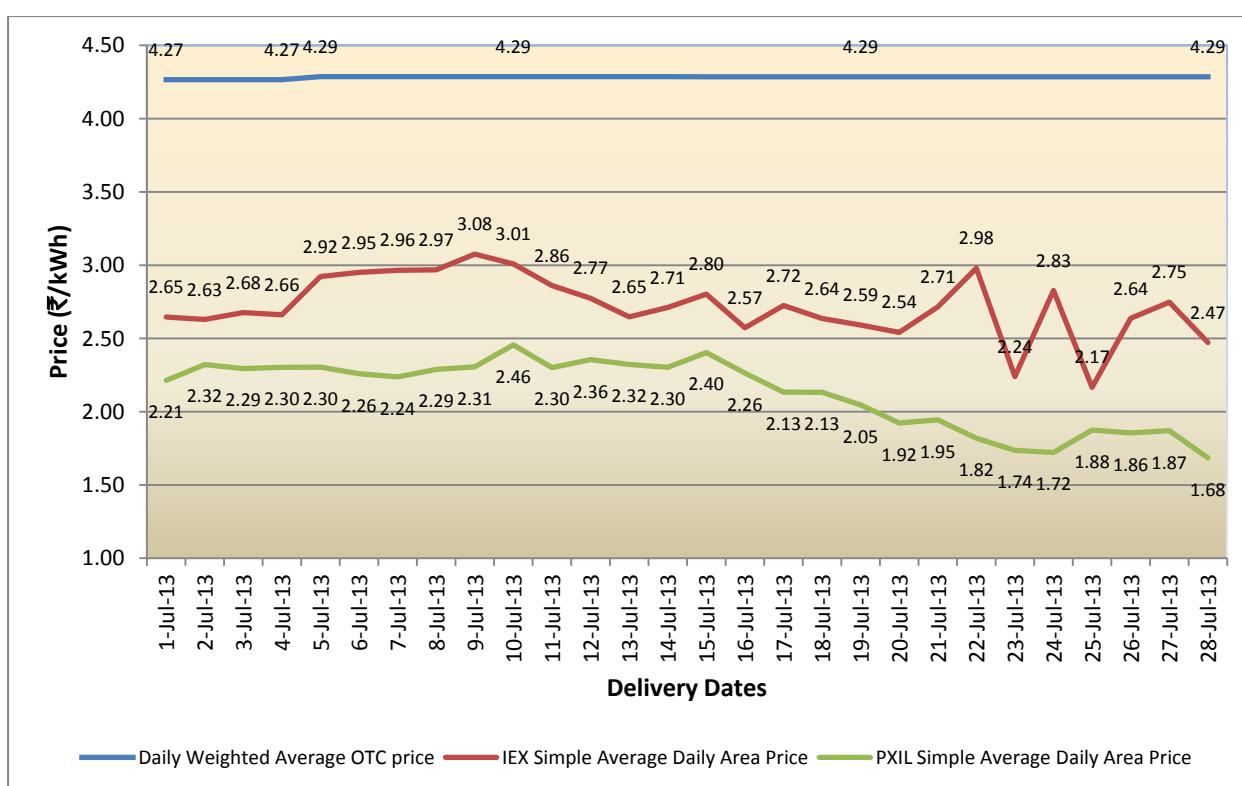
1. The Forward Curve as on 8<sup>th</sup> August 2013 is based on contracts reported up to 28<sup>th</sup> July 2013 and the tenure of the curve is for the period 8<sup>th</sup> August 2013 to 31<sup>st</sup> May 2014 (period of power delivery). The cumulative numbers of contracts reported for the initial months (August and September 2013) were higher (23 and 13 contracts respectively) than those of later months i.e. April to May 2014 (3 contracts for both months). This is in line with the general trend that liquidity is higher for nearer months compared to farther months.
2. A comparison of forward curves (Charts 4.1 & 4.2) gives us a picture of expected delivery price as on 8<sup>th</sup> August 2013 (Chart 4.1), vis a vis the expected delivery price last month, as was on 12<sup>th</sup> July (Chart 4.2). In general, the nature of both forward curves drawn in July and August 2013 are similar for the delivery months except for some price change observed towards end of May 2014. This similarity is because the cumulative volume contracted in months prior to the current reporting period for the delivery period August 2013 – May 2014 far outweighs the volume contracted in the reported period of July 1-28, 2013 for the delivery months August 2013 – May 2014. For example, weighted average price of contracts executed prior to the current reporting period for delivery in December 2013 is ₹4.387/kWh, while the weighted average price of contracts reported this month for delivery in December 2013 delivery is ₹6.06/kWh (which is 138% of ₹4.387/kWh) . However, owing to far higher volumes contracted in months prior to the current reporting period for delivery in December 2013, the weighted average of sale price of contracted power for delivery in December 2013 including contracts executed in the current period increased marginally from ₹4.387/kWh to ₹4.391/kWh.



### 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 Power Exchange prices with OTC deliveries (OTC contracts may have been executed earlier but delivered on the same days as on the exchange spot deliveries). The methodology of calculating the data points of OTC prices is same as in the forward curve.

**Chart 5: Comparison OTC Deliveries and Power Exchange Spot Delivery Price for July 2013**



#### Observations

1. Average Delivery prices of the OTC contracts have been in a very narrow range of ₹4.27 to ₹4.29/ kWh while the prices in power exchanges have fluctuated over a range of ₹1.68 to ₹3.08/ kWh during the period of 1<sup>st</sup> July – 28<sup>th</sup> July 2013. The OTC Contracts prices were always higher than the power exchange prices for the reported period. (It may be noted that Power Exchange is a day ahead market with standardized contracts with no transmission corridor reservation while the OTC - Contracts are weekly/monthly contracts with flexibility of customization and

*transmission corridor reservation. The price comparison of OTC - Contracts and Power Exchanges should be seen in this light.)*

Table 3: List of Trading Licensees who have undertaken Contracts in the period 1<sup>st</sup> July – 28<sup>th</sup> July 2013\*

Name of the Licensee	1st July - 7th July 2013	8th July - 14th July 2013	15th July - 21st July 2013	22nd July - 28th July 2013	Total
Adani Enterprises Ltd.	NIL	Y(1)	NIL	NIL	1
JSW Power Trading Company	NIL	Y(1)	NIL	NIL	1
Mittal Processors (P) Ltd	Y(4)	Y(7)	Y(2)	Y(1)	14
NTPC Vidyut Vyapar Nigam Ltd	Y(13)	Y(8)	Y(4)	NIL	25
PTC India Ltd	Y(13)	Y(18)	Y(12)	Y((10)	53
Reliance Energy Trading (P) Ltd	NIL	NIL	NIL	Y(1)	1
Shree Cement Ltd	Y(1)	NIL	Y(1)	NIL	2
<b>Grand Total</b>	<b>31</b>	<b>35</b>	<b>19</b>	<b>12</b>	<b>97</b>


Note 1: Y ( ): Contracts had been undertaken (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 (up to an 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 diamonds are for contracts for less than a week, the squares are for contracts which have been made for one week or up to one month ahead, the triangles are to represent contracts made for a month or more but for less than three months and the crosses are for three months or up to an year of contracts. In the 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 comparison of daily average OTC price vis-à-vis simple average daily area power exchanges prices for the last month's daily power deliveries. Daily average OTC price is calculated by considering all OTC contracts including daily, weekly, monthly and more than 3-month and up to one year

contracts delivered in the period. The average daily price is the weighted average daily price for all contracts delivered on that day. (Weights being the respective contracted daily volume). For example for a weekly contract the same price is considered discretely as the price for each day of the week, for monthly contract the same price is considered discretely as the price for each day of the month. Then the daily volume weighted average of these weekly/monthly, as the case may be, is calculated and termed a daily average OTC price.

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 hours) 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:

Simple Average Daily Area Price (₹/kWh)

Where  $P_i$  is the price for different 15 minute time blocks in a day