

ANALYSIS OF WEEKLY REPORTS RECEIVED FROM TRADERS (JANUARY 2014)

[An analysis of all weekly reports for 30th December 2013 - 2nd February 2014 received from licensed-traders]



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

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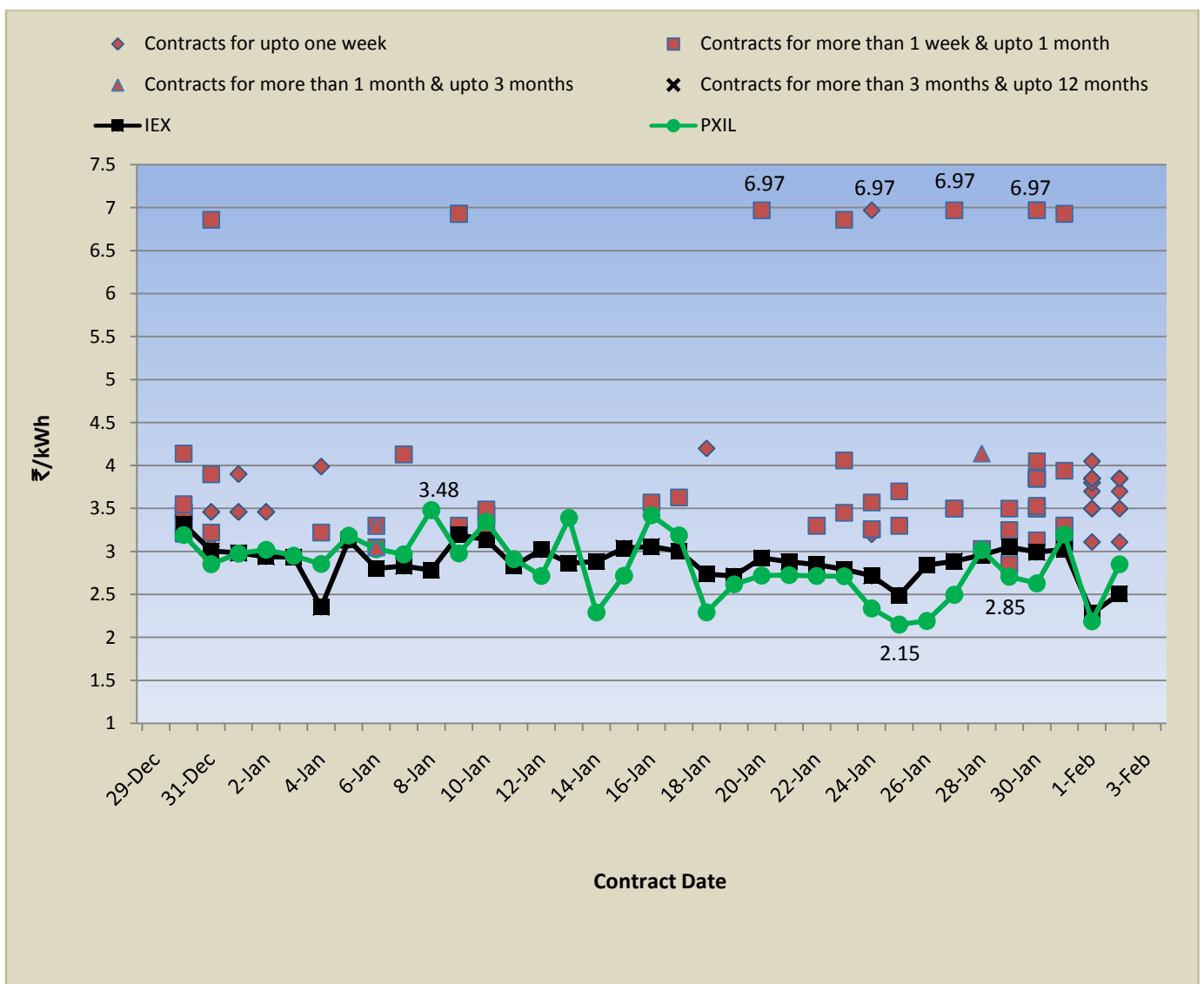
Snapshot for January 2014

- ✓ The reported short-term contract volume for January 2014 (analysis of five weeks) is 3750 MUs whereas the same was 2980 MUs for December 2013 (analysis of four weeks). Average weekly volume transacted during January is almost same as that transacted during December.
- ✓ 14% of total volume during January in comparison to 42% of total volume during December has been contracted at price of more than ₹4/kWh
- ✓ Total number of contracts (including swap & banking) executed during January is 118 by 9 traders whereas the number of contracts executed during December was 92 by 7 traders.

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

The scatter diagram shows a comparative analysis of price movement in OTC and power exchange markets for January 2014. As seen in scatter diagram, majority of the contracts has been executed in the last week of the demonstrated period (refer to annexure I for contracts executed week-wise) and the overall price of OTC contracts executed is in the range of ₹2.85/kWh - ₹6.97/kWh whereas the prices on the exchanges varied between ₹2.15/kWh - ₹3.48/kWh

Chart 1: Scatter Diagram depicting price of electricity in OTC contracts and in Power Exchanges



Note: 1. Day ahead markets on Power Exchanges are 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 and Power Exchanges contracts should be seen in this light.

Table 1 shows week-wise sale prices, weighted average of sale prices and total contracted volume. Table 2 shows comparison between prices discovered on exchanges with the prices contracted by traders in OTC market.

Table I: Price and Volume of OTC Contracts

Week	Range of Sale Price (₹/kWh)		Weighted Average of Sale Price (₹/kWh)	Total Volume (MUs)
	Min	Max		
30 th Dec - 5 th Jan	3.06	6.86	3.64	893
6 th Jan- 12 th Jan	3.05	6.93	3.37	1258
13 th Jan - 19 th Jan	3.57	4.20	3.64	40
20 th Jan - 26 th Jan	3.20	6.97	3.71	373
27 th Jan - 2 nd Feb	2.85	6.97	3.78	1015
Gross			3.59	3579

Table 2: Comparison of prices in Day Ahead Market and in OTC Contracts

Contract Date	30-Dec-13	31-Dec-13	01-Jan-14	02-Jan-14	03-Jan-14	04-Jan-14	05-Jan-14	06-Jan-14	07-Jan-14	08-Jan-14	09-Jan-14	10-Jan-14	11-Jan-14	12-Jan-14
IEX* (₹/kWh)	3.32	3.01	2.98	2.94	2.94	2.35	3.13	2.80	2.83	2.78	3.20	3.14	2.83	3.02
PXIL* (₹/kWh)	3.19	2.85	2.98	3.02	2.95	2.85	3.19	3.03	2.97	3.48	2.98	3.35	2.91	2.72
OTC Contract** (₹/kWh)	3.64							3.37						

Contract Date	13-Jan-14	14-Jan-14	15-Jan-14	16-Jan-14	17-Jan-14	18-Jan-14	19-Jan-14	20-Jan-14	21-Jan-14	22-Jan-14	23-Jan-14	24-Jan-14	25-Jan-14	26-Jan-14
IEX* (₹/kWh)	2.87	2.88	3.04	3.06	3.00	2.74	2.71	2.93	2.88	2.85	2.79	2.72	2.49	2.84
PXIL* (₹/kWh)	3.39	2.29	2.72	3.42	3.19	2.29	2.62	2.72	2.73	2.72	2.71	2.34	2.15	2.19
OTC Contract** (₹/kWh)	3.64							3.71						

Contract Date	27-Jan-14	28-Jan-14	29-Jan-14	30-Jan-14	31-Jan-14	01-Feb-14	02-Feb-14
IEX* (₹/kWh)	2.89	2.96	3.05	2.99	3.02	2.28	2.51
PXIL* (₹/kWh)	2.50	3.02	2.71	2.63	3.20	2.19	2.85
OTC Contract** (₹/kWh)	3.78						

Source: IEX & PXIL Websites

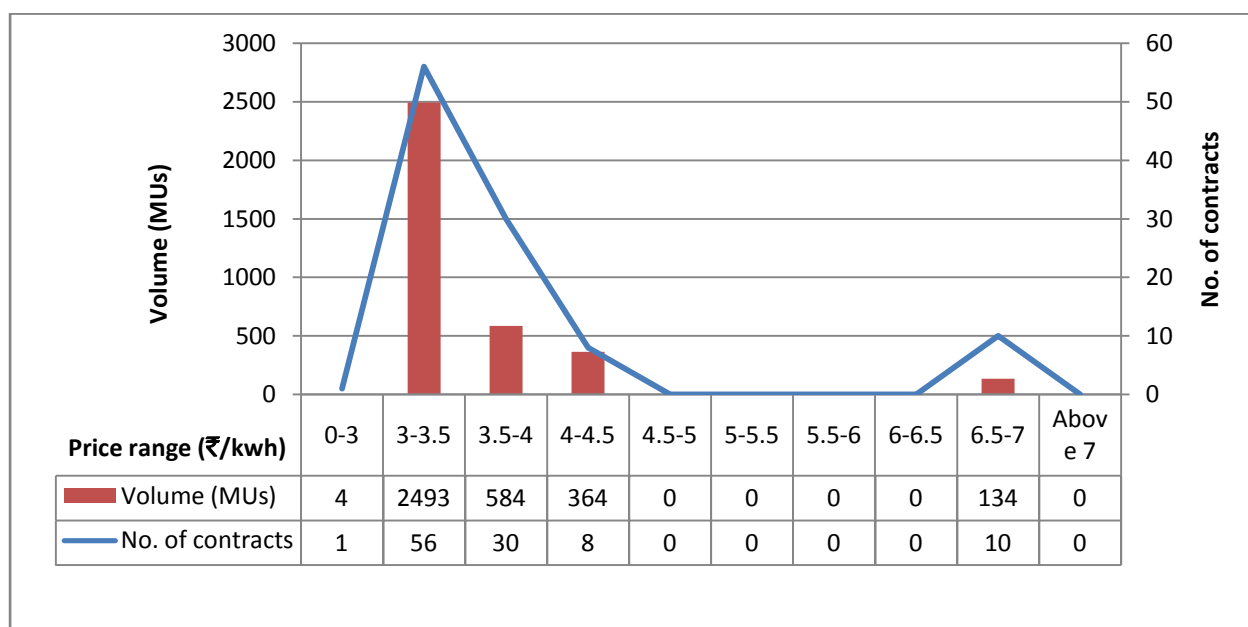
*: Simple Average Area Prices for all Bid Areas

** : Weekly Weighted Average Prices for OTC- Contracts

Observations

1. It is observed that weekly weighted average OTC contract prices were usually higher than average daily prices on Exchanges during the reporting period. The minimum price in OTC market was ₹2.85/kWh (29th January 2014) for 'Off Peak' contract while on the exchanges it was ₹2.15/kWh (PXIL, 25th January 2014) and the maximum price in OTC market was ₹6.97/kWh (20th, 24th, 27th & 30th January 2014) for 'RTC' contract while for Day-Ahead market on the exchange the maximum price was ₹3.48/kWh (PXIL, 8th January 2014). (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.)
2. At sale price above ₹4/kWh, only 18 out of 105* contracts were entered into for a cumulative volume of 498 MUs which is about 14% of total OTC contracts* volume for January 2014.

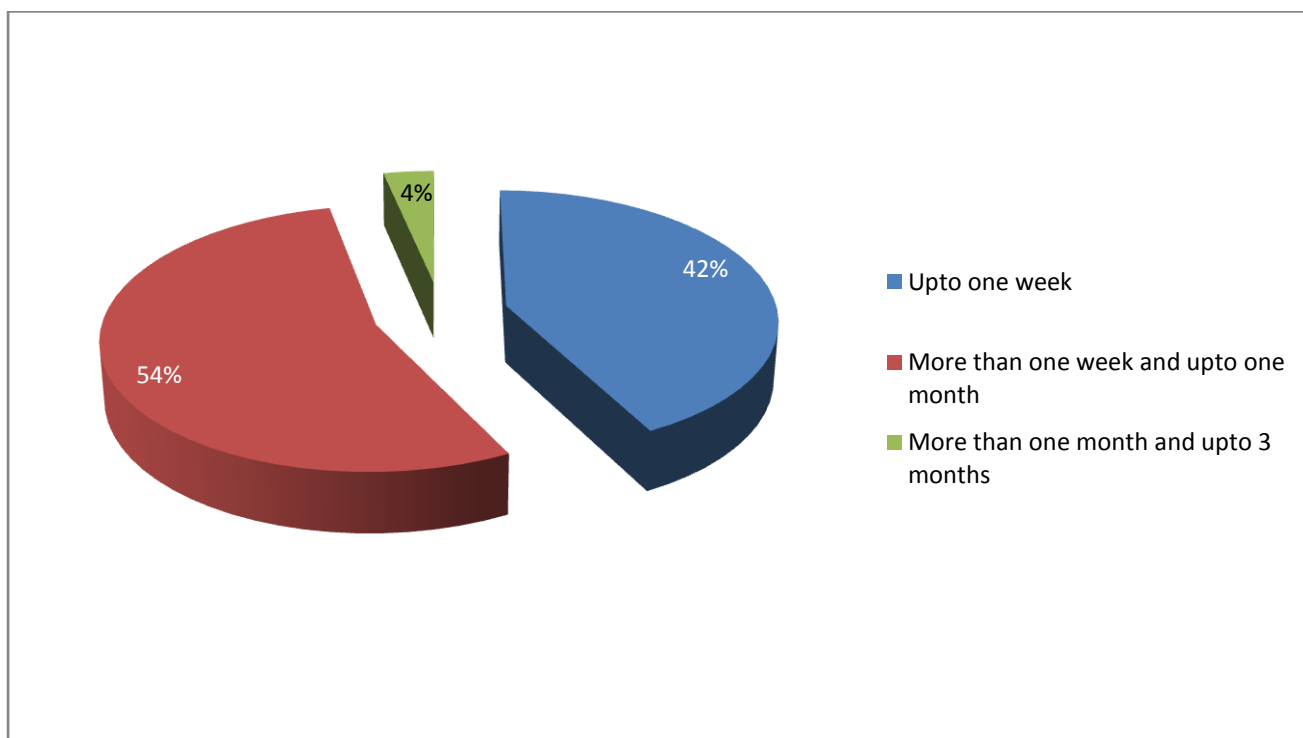
Chart 2: Frequency distribution of number & volume of OTC contracts



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

3. It is observed that majority of the volume contracted (2493 MUs) is in the price range of ₹ 3-3.5 and the maximum number of contracts have also been executed in the same price range.
4. The utilities in the north have purchased majority of volume contracted (about 60%) in the price range of ₹ 3-4/KWh whereas the independent power producers have contributed to majority of the sold volume.
5. The high price transactions in the range of ₹ 6.5-7 have been undertaken in the southern region.
6. The following chart shows the percentage of contracts reported during Jan 2014, categorized according to the period of power supply. There were a total 118 contracts including swap & banking reported for the period.. It can be observed that the almost all contracts were executed for period upto one month only.

Chart 3: Number of contracts reported in January 2014



II. Forward Curve of Power Prices

A forward curve reflects present day's expectation of spot prices for a future period. Forward curves for electricity prices has been drawn for February – May 2014 based on 105 contracts executed in January 2014. Also, for comparison forward price curve has been depicted for January– May 2014 which is based on 75 contracts executed in December 2013.

Chart 4.1: Forward Curve for the period February –June 2014

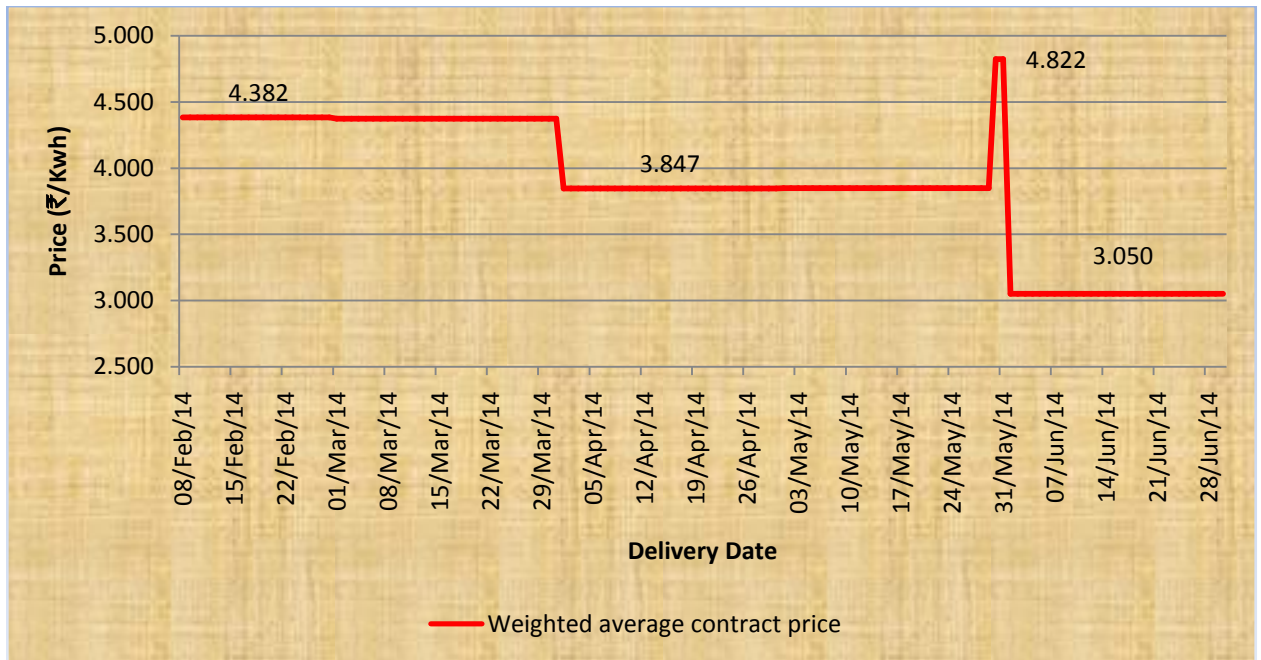
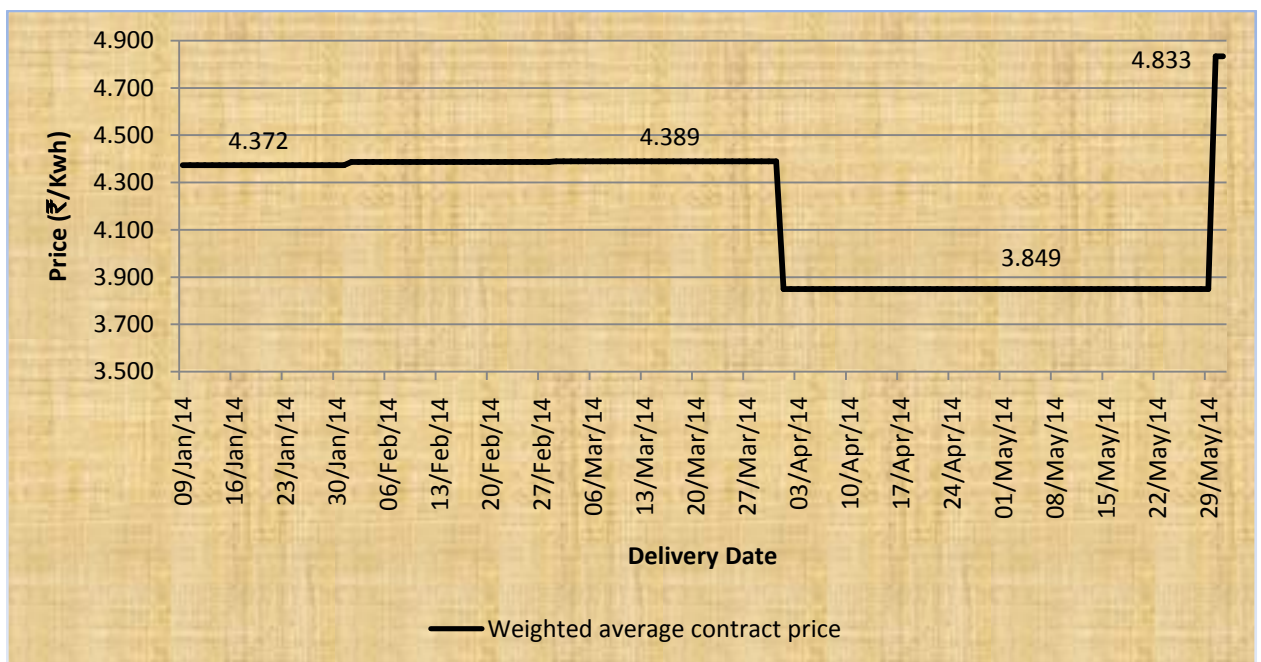


Chart 4.2: Forward Curve for the period January –May 2014



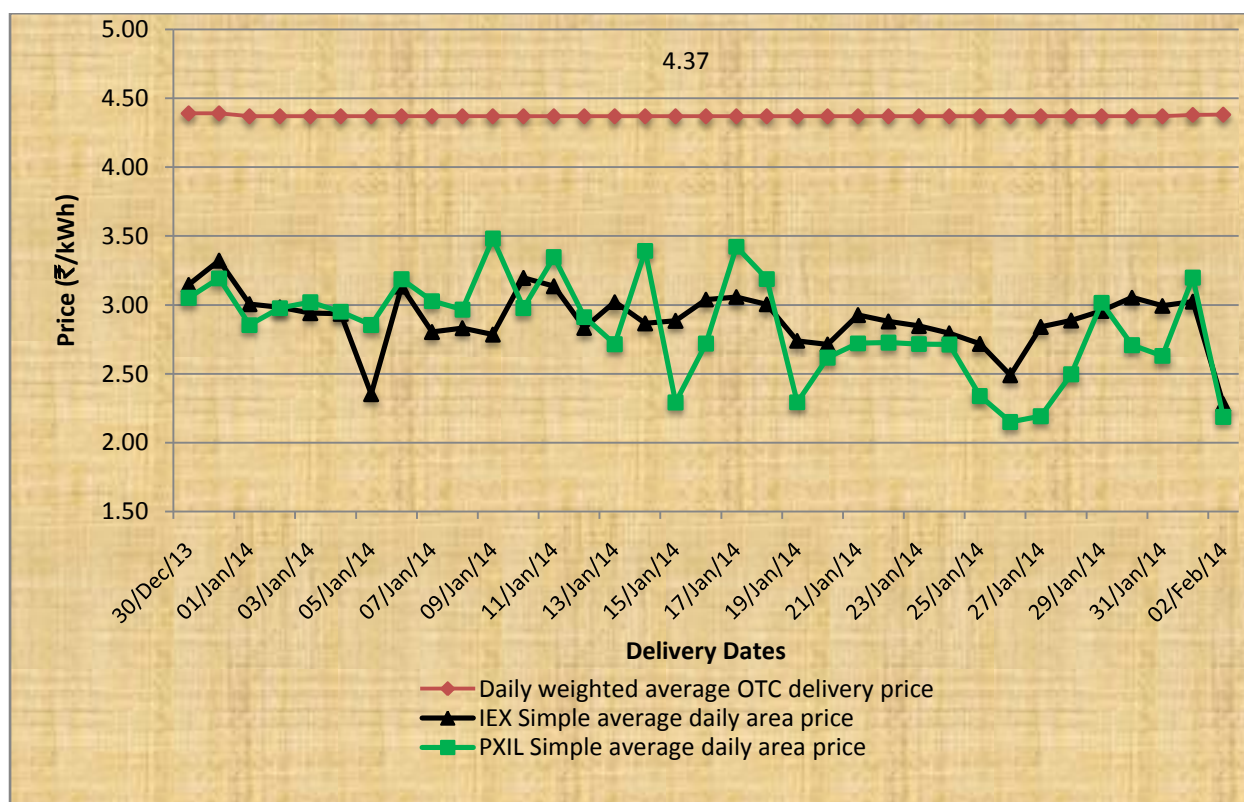
Observations

1. The forward prices for February & March are based on 45-50 contracts, prices for April & May are based on 10-15 contracts and prices for June is based on a single contract. Thus, the liquidity is higher in terms of number of contracts in the nearer months in comparison to farther months and therefore the price indicators are better for nearer months.
2. The shapes of the curves based on contracts reported for January 2014 & December 2013 respectively continue to be similar for the delivery period February - May 2014. However, owing to the new contract executed for June 2014 at a lower weighted average price of ₹3.05/kWh, there is a significant drop in the forward price prevailing during May to the price depicted for June.

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

The post facto graph compares the daily weighted average delivery price of OTC contracts price vis-à-vis power exchanges day ahead prices for Jan 2014 (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 that used for calculating prices for the forward curve.

Chart 5: Comparison OTC delivery price and Power Exchange spot delivery price for January 2014



Observations

1. Daily weighted average delivery price of OTC contracts is almost constant at about ₹4.37/kWh while the power exchanges spot prices have fluctuated over a range of ₹2.15/kWh to ₹3.48/kWh. It can be seen that the weighted average delivery price of OTC contracts is always higher than the power exchanges spot prices. (It may be noted that day ahead market on Power Exchange has 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.)

Annexure-I: List of traders who have undertaken contracts in January 2014*

Trader	30 th Dec - 5 th Jan	6 th Jan- 12 th Jan	13 th Jan - 19 th Jan	20 th Jan - 26 th Jan	27 th Jan - 2 nd Feb	Grand Total
PTC India Ltd	Y(11)	Y(2)	Y(3)	Y(6)	Y(34)	Y(56)
NTPC Vidyut Vitran Nigam Ltd	Y(7)	Y(3)	Y(3)	Y(4)	Y(8)	Y(25)
GMR Energy Trading Ltd	Y(1)	NIL	NIL	Y(2)	Y(6)	Y(9)
Mittal Processors Pvt. Ltd	Y(1)	Y(2)	Y(1)	Y(1)	Y(4)	Y(9)
Adani Enterprise Ltd	NIL	Y(3)	NIL	NIL	Y(3)	Y(6)
National Energy Trading & Services	Y(1)	Y(3)	NIL	NIL	Y(1)	Y(5)
Reliance Energy Trading Ltd	Y(1)	NIL	NIL	NIL	Y(2)	Y(3)
Tata Power Trading Co Ltd	NR	Y(2)	NIL	Y(1)	NR	Y(3)
JSW Power Trading Co. Ltd	Y(1)	NIL	NIL	Y(1)	NIL	Y(2)
Grand Total	Y(23)	Y(15)	Y(7)	Y(15)	Y(58)	Y(118)

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 contract during the reported period. There could be some traders who have reported but did not undertake any contracts.

Annexure-II: Process of Formulation

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

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 an year) transactions of electricity. Each data-point represents contract sale-price on a particular contract date.

Varied shapes are used to depict contracts for different time-span, e.g. the diamonds are for contracts for upto one week, the squares are for contracts which have been executed for more than one week or upto one month ahead, the triangles represent contracts executed for more than one month or for upto three months and the crosses are for contracts more than three months or up to an year. In the diagram, no distinction has been made among the traders. The black and green 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

The forward curve price points are based on OTC sale prices reported by the traders. For a contract of a full month, the contract price is considered discretely as the price for each day. Finally, each price point of the forward curve represents the weighted average sale prices of electricity based on prices of all contracts executed during the current & the prior reporting periods for electricity to be delivered on the day. (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)

Daily weighted average delivery price of OTC contracts is calculated by considering prices of all OTC contracts including daily, weekly, monthly, more than 3-month & up to one year contracts executed during the current & the prior reporting periods for electricity to be delivered on the day. (Weights being the respective contracted daily volume). For example for a weekly contract the same price is considered for

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 as daily weighted average delivery 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 delivery was scheduled for the said dates).
- V. The 96 Blocks(24 hours) average prices of the 12 bid areas is being termed as average daily area price. The Power Exchanges' prices used in the report are calculated using following formulas:

$$\text{Average Daily Area Price (₹/kWh)} = (\sum_{i=1}^{96} P(i))/96000$$

Where $P(i)$ is the price for different 15 minute time blocks in a day