# MONTHLY OTC (ELECTRICITY TRADERS) REPORT (MAY 2014)

[An analysis of all weekly reports received from licensed-traders for 5th May- 1st June 2014]

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

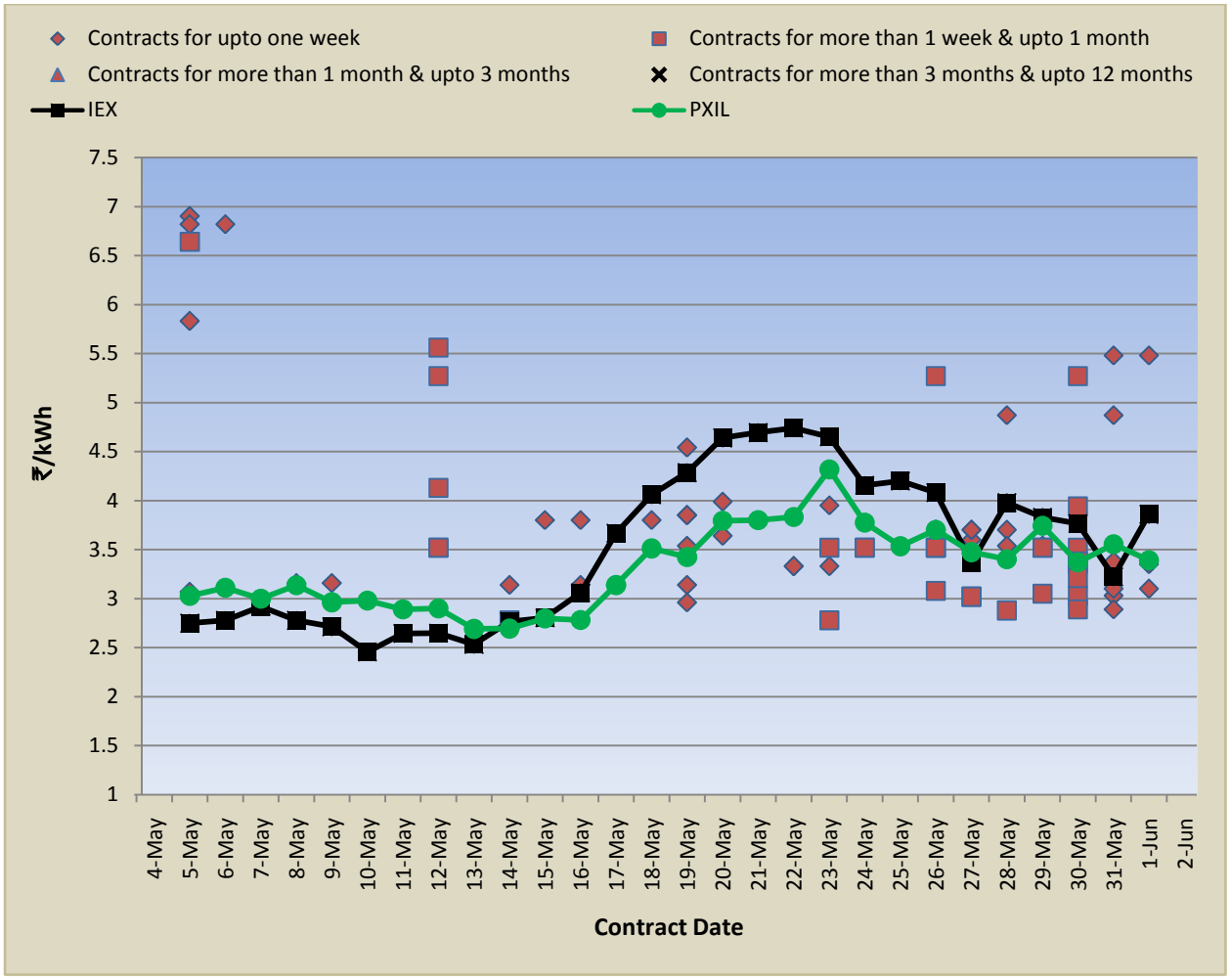
Snapshot for May 2014

- ✓ The short-term volume contracted for May 2014 (analysis of four weeks) is 3055 MUs whereas the same was 4300 MUs for April 2014 (analysis of five weeks). Average weekly volume transacted during May has decreased by 12% in comparison to volume transacted during April.
- ✓ 13% of total volume during May has been contracted at price more than ₹4/kWh in comparison to 14% of total volume during April in the same price range
- ✓ Total number of contracts (including swap & banking) executed during May is 106 by 7 traders whereas the number of contracts executed during April was 109 by 8 traders.

## I. Comparison of prices in Short Term OTC contracts and in Power Exchanges (on Contracted Date)

The scatter diagram shows a comparative analysis of price movement in OTC and power exchange markets in May 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 ₹2.78/kWh -₹6.90/kWh whereas the prices on the exchanges varied between ₹2.46/kWh - ₹4.74/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 daily/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.*

*2. The price comparison between the Power Exchanges and the OTC contracts should also be seen in the light that the delivery point for day ahead contracts is the periphery of regional transmission system in which the grid-connected entity is located whereas the delivery point for OTC contracts may vary from contract to contract. The delivery point may be state or regional periphery or any other point as per the contract executed.*

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 and prices contracted by traders in OTC market.

Table 1: Price and Volume of OTC Contracts

| Week | Range of Sale Price (₹/kWh) | | Weighted Average of Sale Price (₹/kWh) | Total Volume (MUs) |
|---|---|---|---|---|
| | Min | Max | | |
| 5th -11th May | 3.07 | 6.90 | 4.90 | 9 |
| 12th -18th May | 2.78 | 5.56 | 4.85 | 108 |
| 19th -25th May | 2.78 | 4.54 | 3.40 | 299 |
| 26th May – 1st Jun | 2.88 | 5.48 | 3.66 | 2468 |
| Gross | | | 3.68 | 2884 |

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

| Contract Date | 05-May-14 | 06-May-14 | 07-May-14 | 08-May-14 | 09-May-14 | 10-May-14 | 11-May-14 | 12-May-14 | 13-May-14 | 14-May-14 | 15-May-14 | 16-May-14 | 17-May-14 | 18-May-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IEX* (₹/kWh) | 2.75 | 2.78 | 2.92 | 2.78 | 2.71 | 2.46 | 2.64 | 2.65 | 2.53 | 2.77 | 2.80 | 3.06 | 3.67 | 4.06 |
| PXIL* (₹/kWh) | 3.03 | 3.11 | 3.00 | 3.14 | 2.96 | 2.98 | 2.89 | 2.90 | 2.69 | 2.69 | 2.80 | 2.78 | 3.14 | 3.51 |
| OTC Contract** (₹/kWh) | 4.90 | | | | | | | 4.85 | | | | | | |

| Contract Date | 19-May-14 | 20-May-14 | 21-May-14 | 22-May-14 | 23-May-14 | 24-May-14 | 25-May-14 | 26-May-14 | 27-May-14 | 28-May-14 | 29-May-14 | 30-May-14 | 31-May-14 | 01-Jun-14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IEX* (₹/kWh) | 4.28 | 4.64 | 4.69 | 4.74 | 4.65 | 4.16 | 4.20 | 4.08 | 3.37 | 3.98 | 3.83 | 3.77 | 3.22 | 3.86 |
| PXIL* (₹/kWh) | 3.42 | 3.79 | 3.80 | 3.83 | 4.32 | 3.78 | 3.53 | 3.70 | 3.47 | 3.40 | 3.74 | 3.37 | 3.56 | 3.39 |
| OTC Contract** (₹/kWh) | 3.40 | | | | | | | 3.66 | | | | | | |

**Source: IEX & PXIL Websites**
*: Simple Average Area Prices for all bid areas
**: Weekly Weighted Average Prices for OTC- Contracts

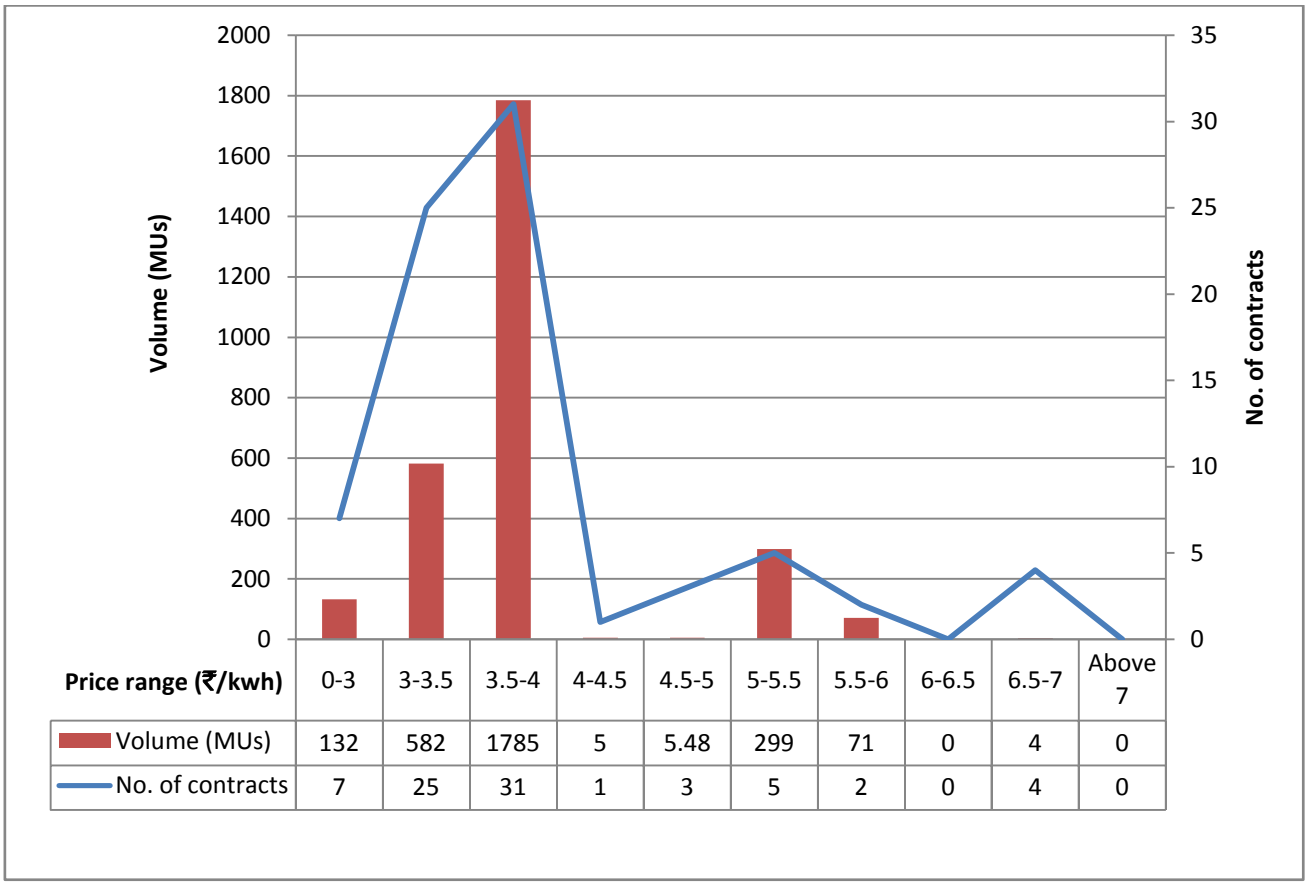
## Observations

1. It is observed that weekly weighted average OTC contract prices were higher than average daily prices on Exchanges during the first half of the reporting period and mostly lower than average daily prices on Exchanges during the second half of the reporting period. The minimum price in OTC market was ₹2.78/kWh (14th, 16th and 23rd May 2014) for 'RTC' contract while on the exchanges it was ₹2.46/kWh (IEX, 10th May 2014). The maximum price in OTC market was ₹6.90/kWh (5th May 2014) for

'RTC' contract while for Day-Ahead market on the exchange the maximum price was ₹ 4.74/kWh (IEX, 22nd May 2014).

2. Only 15 out of 78♣ contracts were entered into at sale price above ₹4/kWh for a cumulative volume of 384 MUs that is about 13% of total OTC contracts♣ volume for May 2014.

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




| Price range (₹/kwh) | 0-3 | 3-3.5 | 3.5-4 | 4-4.5 | 4.5-5 | 5-5.5 | 5.5-6 | 6-6.5 | 6.5-7 | Above 7 |
|---|---|---|---|---|---|---|---|---|---|---|
| Volume (MUs) | 132 | 582 | 1785 | 5 | 5.48 | 299 | 71 | 0 | 4 | 0 |
| No. of contracts | 7 | 25 | 31 | 1 | 3 | 5 | 2 | 0 | 4 | 0 |

3. It is observed that majority of the volume contracted (1785 MUs) is in the price range of ₹3.5-4 and the maximum number of contracts have also been executed in the same price range.

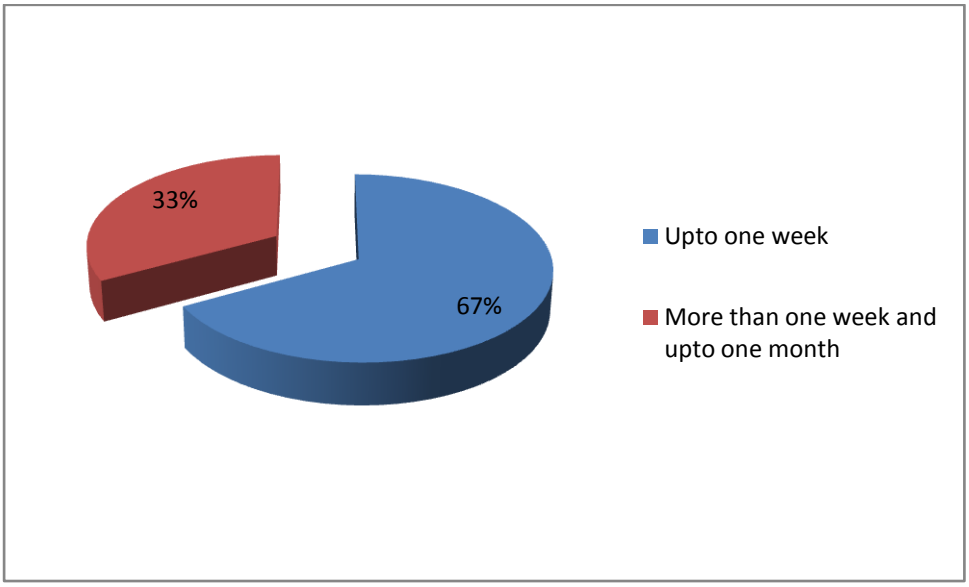
4. The high price transactions in the range of ₹6.5-7 have been undertaken in the southern region.

5. The following chart shows the percentage of contracts reported during May 2014, categorized according to the period of power supply. There were a total 106 contracts

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

including swap/ banking reported for the period. It can be observed that all contracts were executed for period upto one month.

Chart 3: Number of contracts reported in May 2014



## II. Forward Curve of Power Prices

A forward curve reflects present day's expectation of spot prices for a future period. Forward curve for electricity price has been drawn for July 2014 – May 2015 based on contracts executed until May 2014. Also, forward price curve drawn for April 2014 report has been depicted for comparison purposes.

Chart 4.1: Forward Curve for the period July 2014 –May 2015

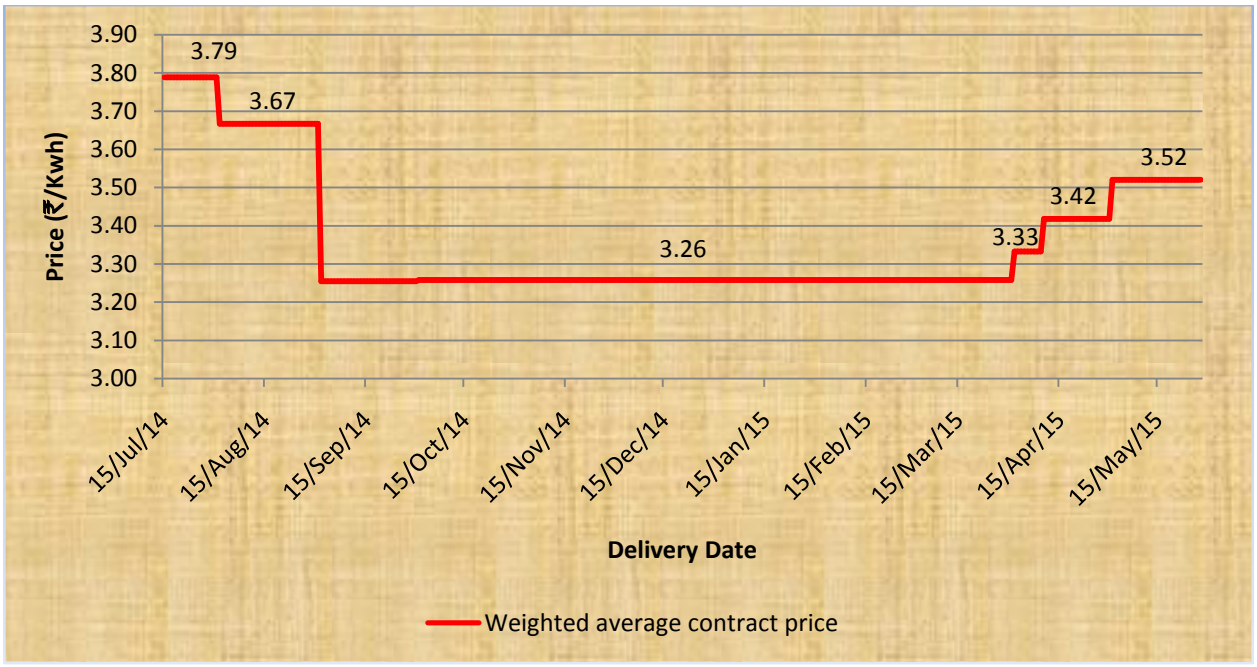
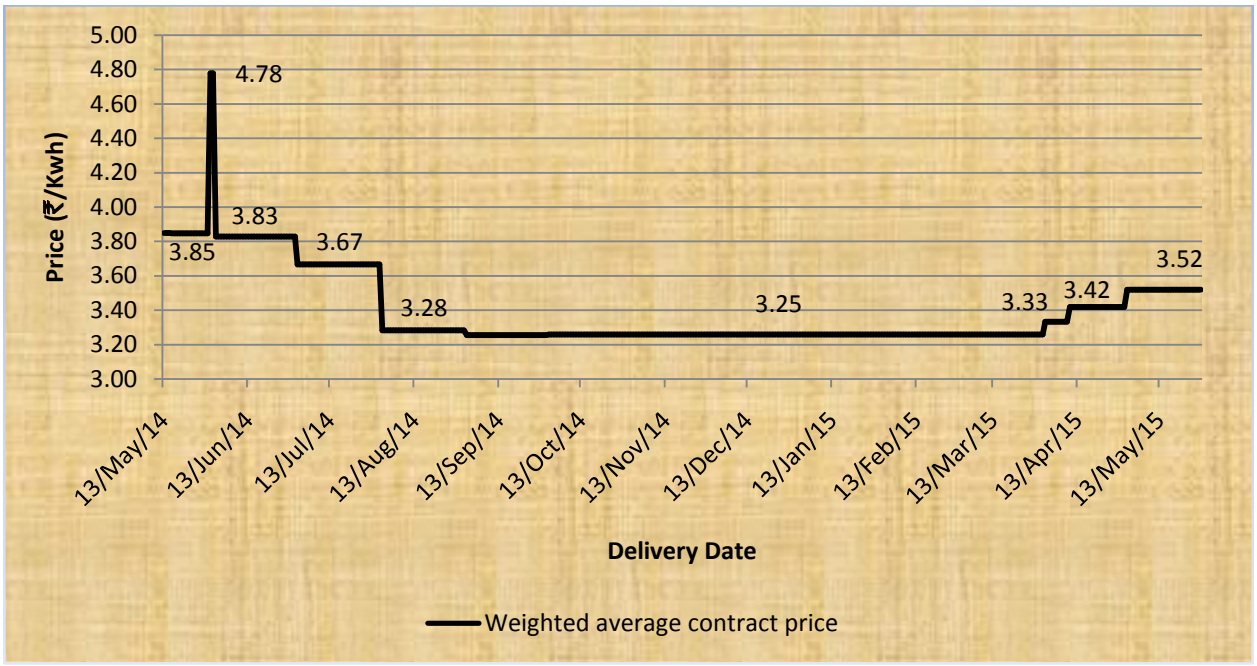



Chart 4.2: Forward Curve for the period May 2014 –May 2015



## Observations

1. The forward prices for July 2014 are based on 23 contracts, prices for August 2014 are based on 14 contracts, prices for September 2014 – March 2015 are based on 7 contracts, and prices for April-May 2015 are based on 1-3 contracts. 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.

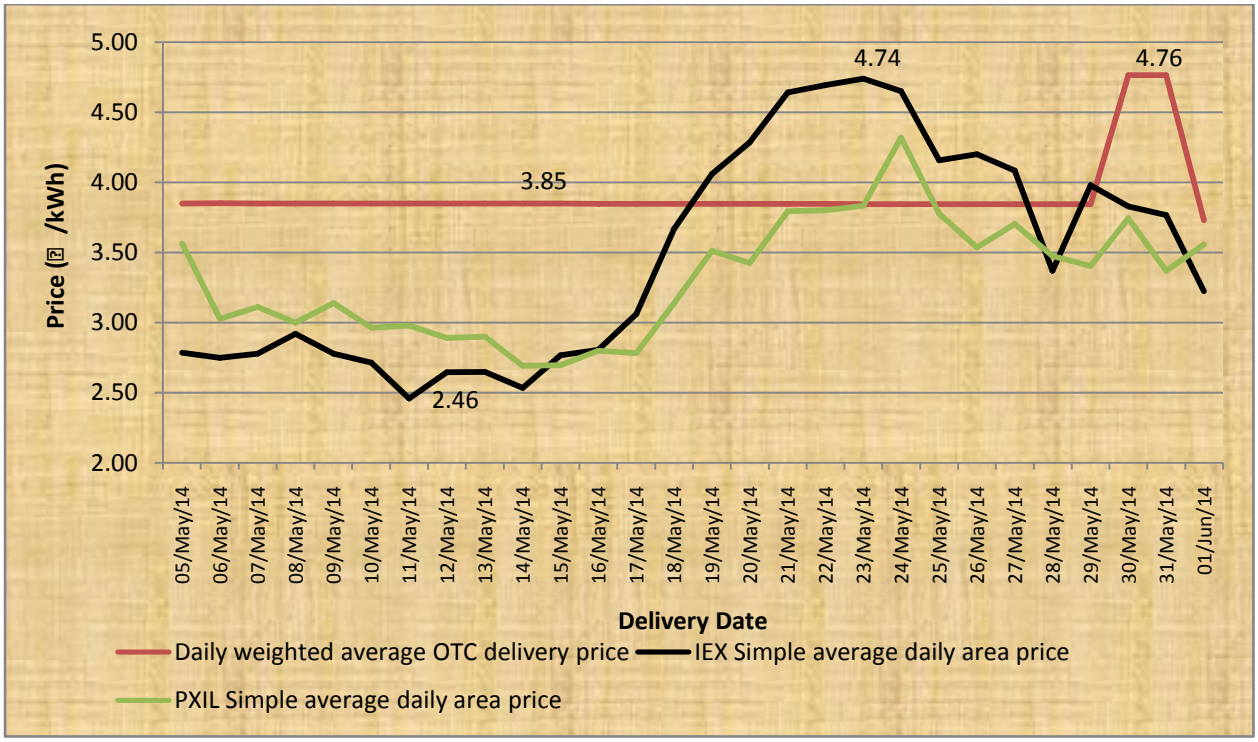
2. The weighted price of the contract in July has increased from ₹3.67/kWh to ₹3.79/kWh and weighted price of the contract in August has increased from ₹3.28/kWh to ₹3.67/kWh. The increase in prices is due to the contracts executed at higher prices.

3. The weighted prices of contracts from September 2014 – May 2015 continues to be similar to the ones for the same period mentioned in the previous report.

## 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 May 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 May 2014




*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.*

*2. The price comparison between the Power Exchanges and the OTC contracts should also be seen in the light that the delivery point for day ahead contracts is the periphery of regional transmission system in which the grid-connected entity is located whereas the delivery point for OTC contracts may vary from contract to contract. The delivery point may be state or regional periphery or any other point as per the contract executed.*

### Observations

1. Daily weighted average delivery price of OTC contracts is almost constant at about ₹3.85/kWh with a blip towards the end with weighted average price of ₹4.76/kWh. The power exchanges spot prices have fluctuated over a range of ₹2.46/kWh to ₹4.74/ kWh.

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

| Trader | 5th May- 11th May | 12th May – 18th May | 19th May – 25th May | 26th May – 1st Jun | Grand Total |
|---|---|---|---|---|---|
| PTC India Ltd | Y(11) | Y(7) | Y(9) | Y(23) | Y(50) |
| NTPC Vidyut Vyapar Nigam Ltd | Y(3) | Y(6) | Y(11) | Y(18) | Y(38) |
| Tata Power Trading Co. Ltd | Y(1) | NR | NIL | Y(6) | Y(7) |
| GMR Energy Trading Ltd | Y(1) | Y(3) | NIL | Y(2) | Y(6) |
| Mittal Processors Pvt. Ltd | Y(1) | NR | NIL | Y(2) | Y(3) |
| National Energy Trading And Services Ltd | NIL | NIL | NIL | Y(1) | Y(1) |
| Shree Cement Ltd | NIL | NIL | NIL | Y(1) | Y(1) |
| **Grand Total** | **Y(17)** | **Y(16)** | **Y(20)** | **Y(53)** | **Y(106)** |

*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:

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

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

**VI.** With respect to the comparison between the prices of day ahead contracts on Power Exchanges and prices of OTC contracts, following may be noted:

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.
2. The comparison should also be seen in the light that the delivery point for day ahead contracts is periphery of regional transmission system in which the grid-connected entity is located whereas the delivery point for OTC contracts may vary from contract to contract. The delivery point may be state or regional periphery or any other delivery point as per the contract executed.