



Monthly Report on Short-term Transactions of Electricity in India

April, 2016



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Abbreviations

Abbreviation	Expanded Version
ACBIL	ACB (India) Limited
ACP	Area Clearing Price
ACV	Area Clearing Volume
Adani HVDC	Adani Power Limited (High Voltage Direct Line Current Line)
AD HYDRO	AD Hydro Power Limited
BALCO	Bharat Aluminum Company Limited
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGPL	Coastal Gujarat Power Limited
CHUZACHEN HEP	Chuzachen Hydro electric power project
COASTGEN	Coastal Energen Private Limited
DAGACHU	Dagachhu Hydro Power Corporation
DB POWER	Diligent Power Pvt. Ltd.
DCPP	Donga Mahua Captive Power Plant
DGEN MEGA POWER	DGEN Mega Power Project
DHARIWAL POWER	Dhariwal Power Station
DSM	Deviation Settlement Mechanism
DVC	Damodar Valley Corporation
EMCO	EMCO Energy Limited
ESSAR POWER	Essar Power Limited
ESSAR STEEL	Essar Steel Ltd
GMR CHHATTISGARH	GMR Chhattisgarh Energy Limited
GMR KAMALANGA	GMR Kamalanga Energy Ltd.
IEX	Indian Energy Exchange Limited
J&K	Jammu & Kashmir
JAYPEE NIGRIE	Jaypee Nigrie Super Thermal Power Project
JINDAL POWER	Jindal Power Limited
JINDAL STAGE-II	Jindal Power Ltd Stage II
JITPL	Jindal India Thermal Power Ltd.
JORETHANG	Jorethang Loop Hydroelectric Power Project
KARCHAM WANGTOO	Jaypee Karcham Hydro Corporation Limited
KORBA WEST POWER	Korba West Power Company Limited
KSK MAHANADI	KSK Mahanadi Power Ltd
LANKO BUDHIL	Lanco Budhil Hydro Power Private Limited
LANKOAMK	Lanco Amarkantak Power Private Limited
LANKOKONDAPALLY	Lanco Kondapally Power Private Limited
LOKTAK	Loktak Power Project
MALANA	Malana Hydroelectric Plant

MB POWER	MB Power Ltd
MEENAKSHI	Meenakshi Energy Private Limited
MP	Madhya Pradesh
MUs	Million Units
NEEPCO	North Eastern Electric Power Corporation Limited
NHPC STATIONS	National Hydro Electric Power Corporation Ltd. Stations
NTPC STATIONS	National Thermal Power Corporation Ltd. Stations
NJPC	Nathpa Jhakri Hydroelectric Power Station
NLDC	National Load Despatch Centre
NSPCL	NTPC - SAIL Power Company Private Limited
OTC	Over The Counter
PX	Power Exchange
PXIL	Power Exchange India Limited
RANGIT HEP	Rangit Hydro electric power project
REC	Renewable Energy Certificate
RGPPL	Ratnagiri Gas and Power Private Limited
RLDC	Regional Load Despatch Centre
RTC	Round The Clock
SHREE CEMENT	Shree Cement Limited
SIMHAPURI	Simhapuri Energy Private Limited
SPECTRUM	Spectrum Power Generation Ltd
STERLITE	Sterlite Energy Limited
TEESTA HEP	Teesta Hydro Electric Power Project
THERMAL POWERTECH	Thermal Powertech Corporation India Limited
URI2	URI2 Hydro Power Project
UT	Union Territory
VANDANA VIDYUT	Vandana Vidyut Limited

Introduction

A well-functioning electricity market requires an effective market monitoring process. As part of the market monitoring process, the monthly report on short-term transactions of electricity, is being prepared and posted on the website of CERC since August 2008. Here, “short-term transactions of electricity” refers to the contracts of less than one year period, for electricity transacted (inter-State & intra-State) through inter-State Trading Licensees and directly by the Distribution Licensees, Power Exchanges (Indian Energy Exchange Ltd (IEX) and Power Exchange India Ltd (PXIL), and Deviation Settlement Mechanism (DSM). The objectives of the report are: (i) to observe the trends in volume and price of the short-term transactions of electricity; (ii) to analyse competition among the market players; (iii) to analyse effect of congestion on volume of electricity transacted through power exchanges; (iv) to analyse bilateral contracts executed by traders; (v) to provide information on volume and price of Renewable Energy Certificates (RECs) transacted through power exchanges; and (vi) to disclose/disseminate all relevant market information. The details of the report for the month of **April, 2016** are as under:

I: Volume of Short-term Transactions of Electricity

During April 2016, total electricity generation excluding generation from renewable and captive power plants in India was 99393.01 MUs (Table-1).

Of the total electricity generation, 9575.10 MUs (9.63%) was transacted through short-term, comprising of 4375.67 MUs (4.40%) through bilateral (through traders and term-ahead contracts on power exchanges and directly between distribution companies), followed by 3500.78 MUs (3.52%) through day ahead collective transactions on power exchanges (IEX and PXIL) and 1698.65 MUs (1.71%) through DSM (Table-1 & Figure-2).

Of the total short-term transactions, bilateral constitutes 45.70% (27.31% through traders and term-ahead contracts on power exchanges and 18.39% directly between distribution companies) followed by 36.56% through day ahead collective transactions on power exchanges and 17.74% through DSM (Table-1& Figure-1). Daily volume of short-term transactions is shown in Table-17 & Figure-3.

The percentage share of electricity traded by each trading licensee in the total volume of electricity traded by all the trading licensees is provided in Table-2 & Figure-4. The volume of electricity transacted by the trading licensees includes bilateral transactions and the transactions undertaken through power exchanges. There were 40 trading licensees as on April, 2016. In April 2016, 22 trading licensees were engaged in short term trading. Top 5 trading licensees had a share of 71.68% in the total volume traded by all the licensees. These are PTC India Ltd., Tata Power Trading Company (P) Ltd., JSW Power Trading Company Ltd., Adani Enterprises Ltd., and Mittal Processors (P) Ltd.

Herfindahl-Hirschman Index (HHI) has been used for measuring the competition among the trading licensees. Increase in the HHI generally indicates a decrease in competition and an increase of market concentration, and vice versa. The HHI below 0.15 indicates non-concentration, HHI between 0.15 and 0.25 indicates moderate concentration and HHI above 0.25 indicates high concentration. The HHI has been computed based on the volume of electricity traded (inter-State & intra-State) by inter-State trading licensees, and it was 0.1656 for the month of April 2016, which indicates moderate concentration of market power (Table-2).

The volume of electricity transacted through IEX and PXIL in the day ahead market was 3452.40 MUs and 48.37 MUs respectively. The volume of total buy bids and sell bids was 4428.46 MUs and 5157.86 MUs respectively in IEX while the same was 68.46 MUs and 53.67 MUs respectively in PXIL. The variation in the volume of buy bids and sell bids placed through power exchanges shows variation in the demand and supply position.

The volume of electricity transacted through IEX and PXIL in the term-ahead market was 122.32 MUs and 168.29 MUs respectively (Table-6 & Table-7).

II: Price of Short-term Transactions of Electricity

(i) *Price of electricity transacted through Traders:* The minimum, maximum and weighted average sale prices have been computed for the electricity transacted through traders and the sale prices were ₹2.61/kWh, ₹6.54/kWh and ₹3.84/kWh respectively (Table-3). The weighted average sale prices were also computed for the transactions during Round the Clock (RTC), Peak and Off-Peak periods separately, and the sale prices were ₹3.91/kWh, ₹2.99/kWh and ₹3.14/kWh respectively (Table-4).

(ii) Price of electricity transacted through Power Exchanges: The minimum, maximum and weighted average prices have been computed for the electricity transacted through IEX and PXIL separately. The minimum, maximum and weighted average prices were ₹0.80/kWh, ₹10.00/kWh and ₹2.93/kWh respectively in IEX and ₹2.11/kWh, ₹4.20/kWh and ₹2.73/kWh respectively in PXIL (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹3.94/kWh and ₹2.87/kWh respectively (Table-6 and Table-7).

(iii) Price of electricity transacted through DSM: The average deviation settlement price was ₹1.95/kWh. The minimum and maximum deviation settlement prices were ₹0.00/kWh and ₹7.20/kWh respectively (Table-8).

The prices of electricity transacted through trading licensees, power exchanges and DSM and their comparison is shown in Table-18 and Figure-5 & 6.

III: Volume of Short-term Transactions of Electricity (Regional Entity¹-Wise)

Of the total bilateral transactions, top 5 regional entities sold 37.35% of the volume, and these were GMR Kamalanga Energy Ltd., Diligent Power Pvt. Ltd., Gujarat, Jindal India Thermal Power Ltd. and Thermal Powertech Corporation India Ltd. Top 5 regional entities purchased 63.83% of the volume, and these were West Bengal, Telangana, Maharashtra, Chhattisgarh and Haryana (Table-9& 10).

Of the total power exchange transactions, top 5 regional entities sold 35.10% of the volume, and these were Jindal India Thermal Power Ltd., Madhya Pradesh, Gujarat, Jindal Power Ltd. and Haryana. Top 5 regional entities purchased 50.52% of the volume, and these were Bihar, Gujarat, Rajasthan, Essar Steel Ltd., and Andhra Pradesh (Table-11 & 12).

Of the total DSM transactions, top 5 regional entities underdrew 32.07% of the volume, and these were Maharashtra, NTPC Stations (Western Region), Haryana, Uttar Pradesh and Tamil Nadu (Table-13). Top 5 regional entities overdrew 25.99% of the volume,

¹ In case of a state, the entities which are “selling” also include generators connected to state grid and the entities which are “buying” also include open access consumers.

and these were Bihar, NTPC Stations (Eastern Region), Jharkhand, Uttar Pradesh and Karnataka (Table-14).

Regional entity-wise total volume of net short-term transactions of electricity i.e. volume of net transactions through bilateral, power exchanges and DSM is shown in Table-15 & 19. Top 5 electricity selling regional entities were Jindal India Thermal Power Ltd, Madhya Pradesh, Diligent Power Pvt. Ltd., Jindal Power Ltd. and GMR Kamalanga Energy Ltd. Top 5 electricity purchasing regional entities were West Bengal, Telangana, Bihar, Maharashtra and Uttar Pradesh.

IV: Congestion² on Inter-State Transmission Corridor for Day-Ahead Market on Power Exchanges

Power Exchanges use a price discovery mechanism in which the aggregate demand and supply are matched to arrive at an unconstrained market price and volume. This step assumes that there is no congestion in the inter-State transmission system between different regions. However, in reality, the system operator (NLDC) in coordination with RLDCs limits the flow (due to congestion) in the inter-State transmission system. In such a situation, power exchanges adopt a mechanism called “Market Splitting”³.

In the month of April 2016, congestion occurred in both the power exchanges. The details of congestion are shown in Table-16. The volume of electricity that could not be cleared due to congestion and could not be transacted through power exchanges is the difference between unconstrained cleared volume (volume of electricity that would have been scheduled, had there been no congestion) and actual cleared volume.

² “Congestion” means a situation where the demand for transmission capacity exceeds the available transfer capability

³ “Market Splitting” is a mechanism adopted by Power Exchange where the market is split in the event of transmission congestion, into predetermined (by NLDC) bid areas or zones, which are cleared individually at their respective area prices such that the energy balance in every bid area is reached based upon the demand and supply in individual bid areas and using the available transmission corridor capacity between various bid areas simultaneously”

As a result of this market splitting the price of electricity in the importing region, where demand for electricity is more than supply, becomes relatively higher than the price of electricity in the exporting region.

During the month, the volume of electricity that could not be cleared in IEX and PXIL due to congestion was 7.90% and 9.80% of the unconstrained cleared volume respectively. In terms of time, congestion occurred was 87.43% in IEX and 20.00% in PXIL (Table-16).

V: Bilateral Contracts executed by Traders

In addition to the analysis on short-term transactions of electricity in April 2016, this section covers an analysis of bilateral contracts executed in May, 2016.

(i) Duration of bilateral contracts: During May, 2016, a total of 53 bilateral contracts (excluding banking/swap contracts) have been executed by traders for the volume of 1013.31MUs. Figure-7 shows the percentage of contracts categorized according to the period of power supply. It can be observed from the figure that 22.64% of the bilateral contracts were executed for duration of up to one week and 77.36% of the contracts were executed for duration of more than a week and upto one month.

During the month, 19 banking/swapping bilateral contracts were also executed for the volume of 538.88MUs.

(ii) Forward Curve based on price of bilateral contracts: A forward curve reflects present day's expectation of prices for a future period. The forward curve of electricity prices are based on sale prices of bilateral contracts executed by traders. The price of each contract for each day is taken into consideration while constructing the forward curve. On the basis of these prices, the weighted average price for each day is calculated using various sale prices of contracts for delivery on that particular day.

Figure-8 represents the forward curve of electricity sale prices for the period from April, 2016 to July, 2016 based on bilateral contracts⁴ executed till May, 2016. Forward curves have been drawn for the contracts executed in May, 2016 and April, 2016 for the purpose of comparison. It is observed that the forward prices were almost same for the contracts executed in May, 2016 and the contracts executed in April, 2016.

⁴Excluding Banking/Swapping contracts

VI: Volume and Price of Renewable Energy Certificates (RECs)

The concept of Renewable Energy Certificates (RECs) seeks to address mismatch between availability of renewable energy and the requirement of the obligated entities to meet their renewable purchase obligation by purchasing green attributes of renewable energy remotely located in the form of RECs. The REC mechanism is a market based instrument, to promote renewable sources of energy and development of electricity market.

One REC is equivalent to 1 MWh electricity injected into the grid from renewable energy sources. The REC is exchanged only in the power exchanges approved by CERC within the band of a floor price and forbearance (ceiling) price as notified by CERC from time to time. The first REC trading session was held on power exchanges in March, 2011.

The details of REC transactions for the month of April, 2016 are shown in Table-20. The market clearing volume of solar RECs transacted on IEX and PXIL were 22958 and 2695 respectively and the market clearing price of these RECs was ₹3500/MWh on both the power exchanges. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 238485 and 51972 respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

The gap between the volume of buy and sell bids of RECs placed through power exchanges shows that there was less demand for both solar and non-solar RECs. For Solar RECs, the ratio of buy bids to sell bids was 0.010 and 0.003 for IEX and PXIL respectively. For non-solar RECs, the ratio of buy bids to sell bids was 0.027 and 0.014 for IEX and PXIL respectively.

VII: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 9.63%.
- Of the total short-term transactions of electricity, 45.70% was transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies), followed by 36.56% through power exchanges and 17.74% through DSM.
- Top 5 trading licensees had a share of 71.68% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for the volume of electricity traded by trading licensees was 0.1656, indicating moderate concentration of market power.
- The weighted average price of electricity transacted through trading licensees was ₹3.84/kWh. The weighted average prices of electricity transacted through IEX and PXIL were ₹2.93/kWh and ₹2.73/kWh respectively.
- The average price of electricity transacted through DSM was ₹1.95/kWh.
- Top 5 electricity selling regional entities were Jindal India Thermal Power Ltd, Madhya Pradesh, Diligent Power Pvt. Ltd., Jindal Power Ltd. and GMR Kamalanga Energy Ltd. Top 5 electricity purchasing regional entities were West Bengal, Telangana, Bihar, Maharashtra and Uttar Pradesh.
- The volume of electricity that could not be cleared due to congestion was 7.90% and 9.80% of the unconstrained cleared volume in IEX and PXIL, respectively. In terms of time, congestion occurred was 87.43% of the time in IEX and 20.00% of the time in PXIL.
- In May 2016, 22.64% of the bilateral contracts were executed for duration of up to one week and 77.36% of the contracts were executed for duration of more than a week and upto one month.

- The forward prices were almost same for the contracts executed in May, 2016 and the contracts executed in April, 2016.
- The market clearing volume of solar RECs transacted on IEX and PXIL were 22958 and 2695 respectively and the market clearing price of these RECs was ₹3500/MWh on both the power exchanges. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 238485 and 51972 respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), APRIL 2016

Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	4375.67	45.70	4.40
	(i) Through Traders and PXs	2614.82	27.31	2.63
	(ii) Direct	1760.85	18.39	1.77
2	Through Power Exchanges	3500.78	36.56	3.52
	(i) IEX	3452.40	36.06	3.47
	(ii) PXIL	48.37	0.51	0.049
3	Through DSM	1698.65	17.74	1.71
	Total	9575.10	-	9.63
	Total Generation	99393.01	-	-

Source: NLDC

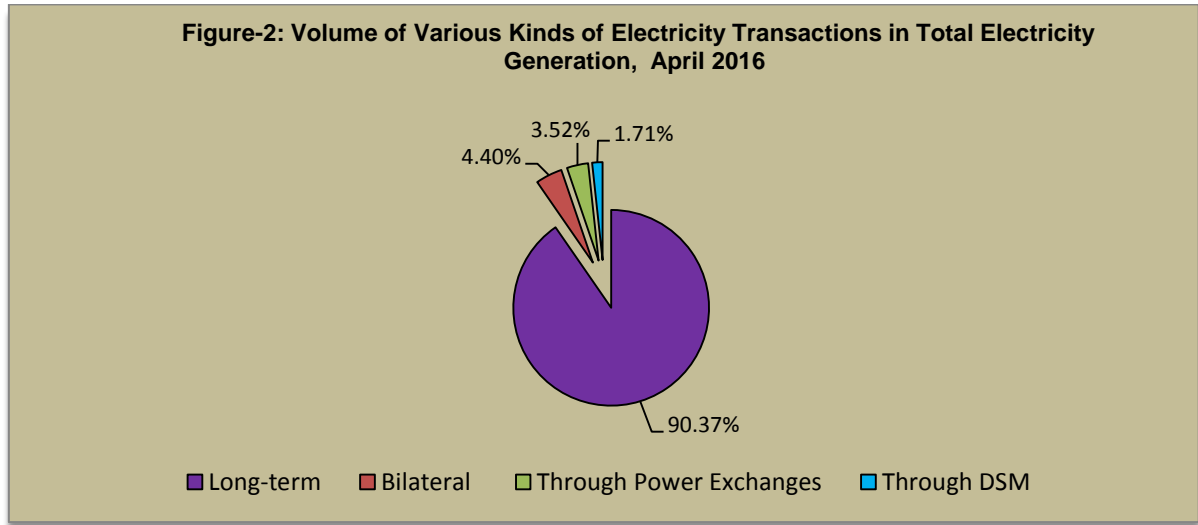
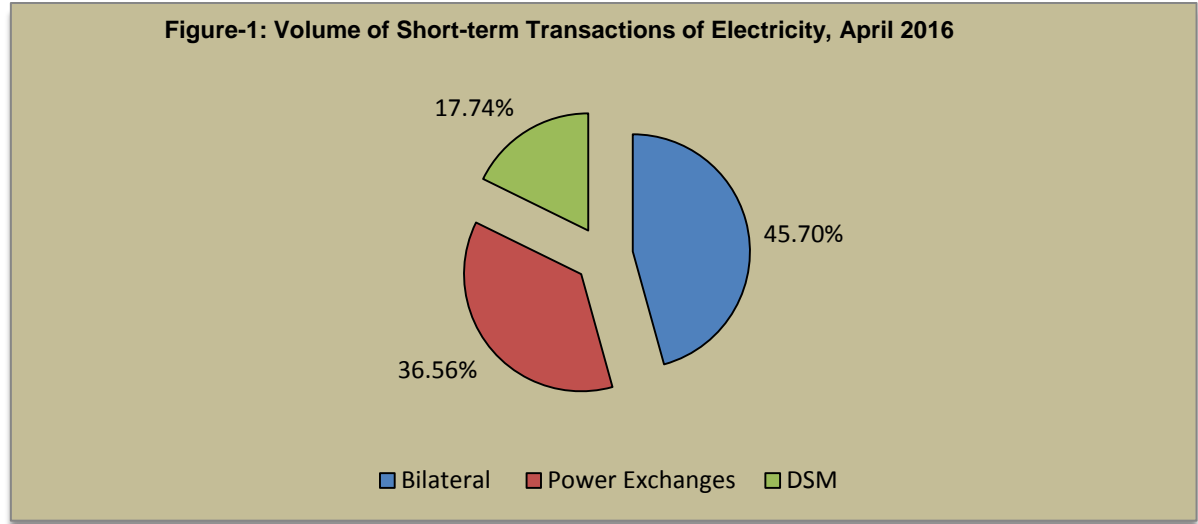


Figure-3: Volume of Short-term Transactions of Electricity, April 2016 (Day-wise)

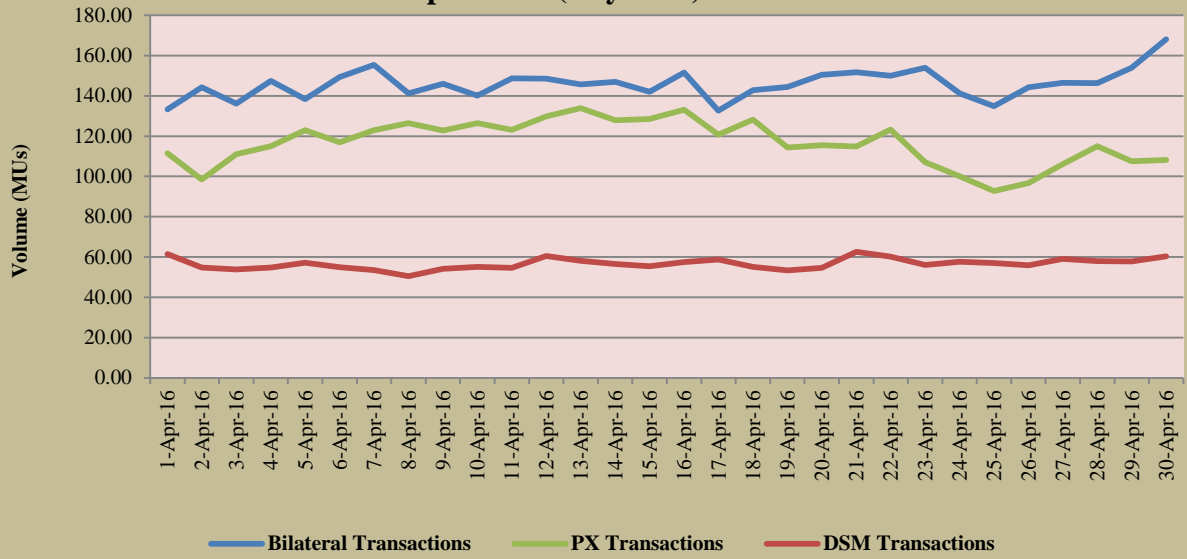


Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, APRIL 2016			
Sr.No	Name of the Trading Licensee	% Share in total Volume transacted by Trading Licensees	Herfindahl-Hirschman Index
1	PTC India Ltd.	34.61	0.1198
2	Tata Power Trading Company (P) Ltd.	12.49	0.0156
3	JSW Power Trading Company Ltd	9.96	0.0099
4	Adani Enterprises Ltd.	7.47	0.0056
5	Mittal Processors (P) Ltd.	7.15	0.0051
6	NTPC Vidyut Vyapar Nigam Ltd.	5.42	0.0029
7	Manikaran Power Ltd.	4.95	0.0024
8	GMR Energy Trading Ltd.	4.04	0.0016
9	Knowledge Infrastructure Systems (P) Ltd	3.25	0.0011
10	Arunachal Pradesh Power Corporation (P) ltd	2.54	0.0006
11	Jaiprakash Associates Ltd.	1.62	0.0003
12	Shree Cement Ltd.	1.50	0.0002
13	RPG Power Trading Company Ltd.	1.23	0.0002
14	Instinct Infra & Power Ltd.	0.92	0.0001
15	Gita Power & Infrastructure Private Limited	0.63	0.0000
16	Essar Electric Power Development Corp. Ltd.	0.59	0.0000
17	SN Power Markets Pvt. Ltd.	0.48	0.0000
18	National Energy Trading & Services Ltd.	0.35	0.0000
19	My Home Power Private Ltd.	0.31	0.0000
20	Ambitious Power Trading Company Ltd.	0.28	0.0000
21	Phillip Commodities India (P) Ltd.	0.11	0.0000
22	Customized Energy Solutions India (P) Ltd.	0.11	0.0000
TOTAL		100.00%	0.1656
Top 5 trading licensees		71.68%	
<i>Note 1: Volume of electricity transacted by the trading licensees includes bilateral transactions (inter-state & intra-state) and the transactions undertaken through power exchanges.</i>			
<i>Note 2: Volume of electricity transacted by Global Energy Ltd is not included.</i>			
<i>Source: Information submitted by trading licensees</i>			

Figure- 4 : Percentage Share of Electricity Transacted by Trading Licensees, April 2016

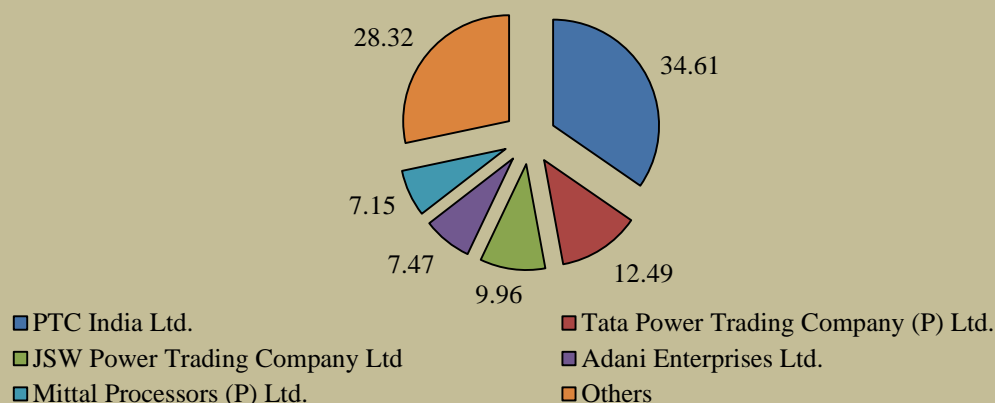


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, APRIL 2016		
Sr.No	Item	Sale Price of Traders (₹/kWh)
1	Minimum	2.61
2	Maximum	6.54
3	Weighted Average	3.84

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), APRIL 2016		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	3.91
2	PEAK	2.99
3	OFF PEAK	3.14

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, APRIL 2016			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	0.80	2.11
2	Maximum	10.00	4.20
3	Weighted Average	2.93	2.73

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, APRIL 2016			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	36.20	3.42
2	Day Ahead Contingency Contracts	24.83	3.35
3	Daily Contracts	15.60	4.40
4	Weekly Contracts	45.69	4.52
	Total	122.32	3.94

Source: IEX

Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, APRIL 2016			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	76.09	2.88
2	Daily Contracts	92.20	2.86
	Total	168.29	2.87

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH DSM, APRIL 2016		
Sr.No	Item	Price in All India Grid (₹/kWh)
1	Minimum	0.00
2	Maximum	7.20
3	Average	1.95

Source: NLDC

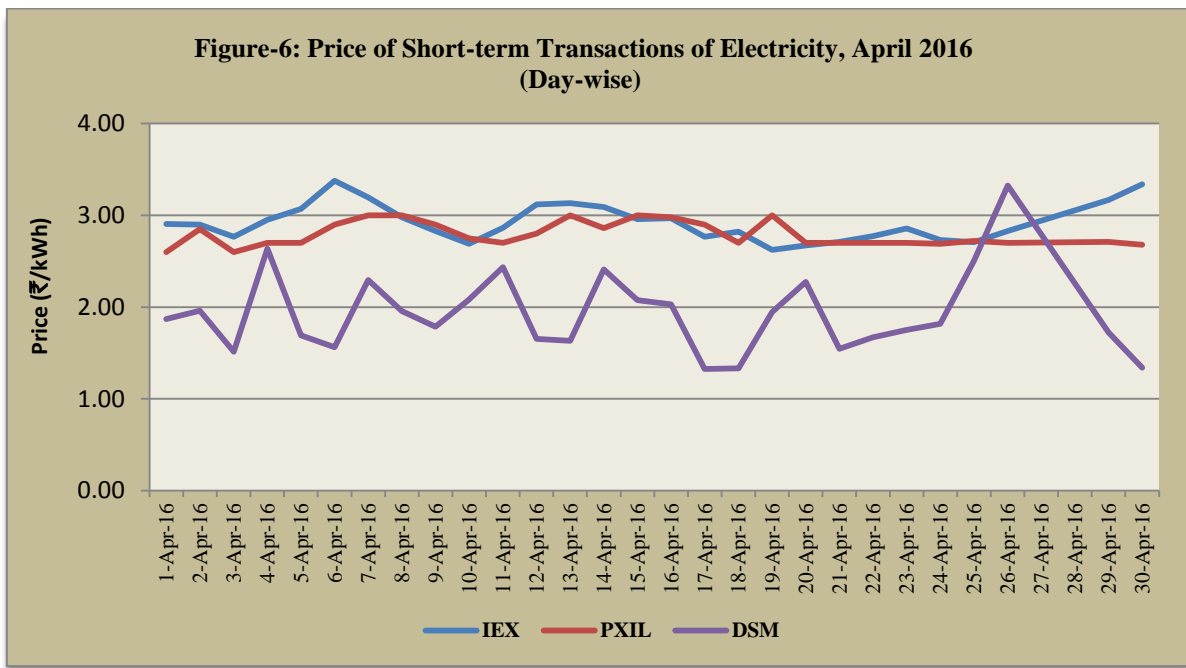
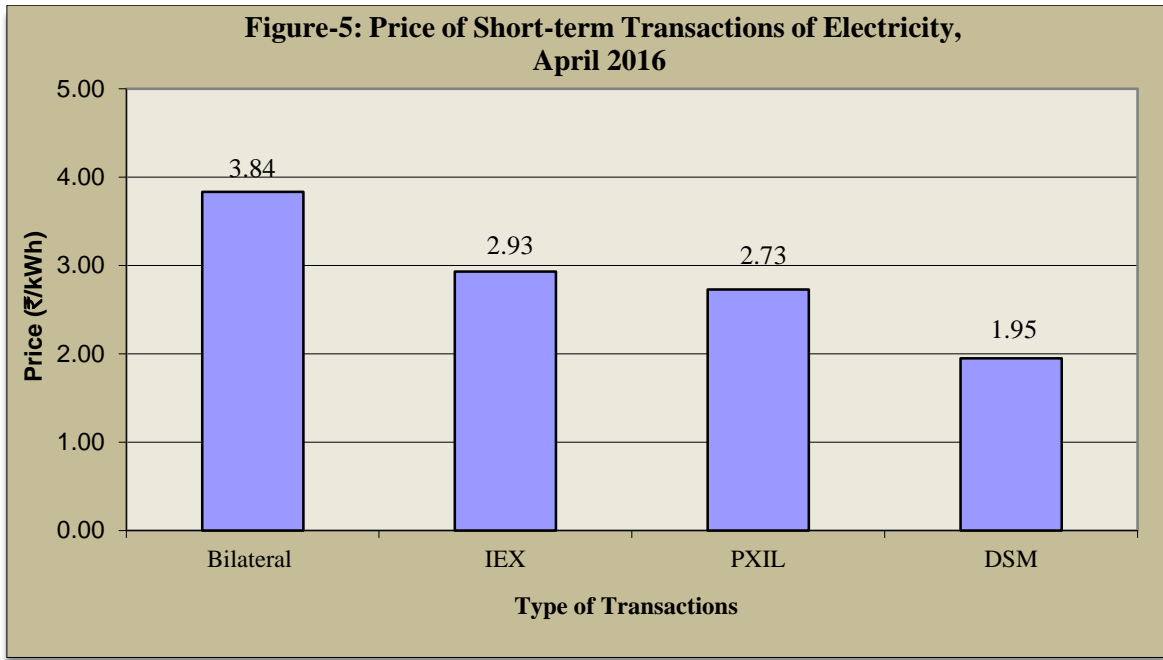


Table-9: VOLUME OF ELECTRICITY SOLD THROUGH BILATERAL, APRIL 2016		
Name of the State/UT/Other Regional Entity	Volume of Sale (MUs)	% of Volume
GMR KAMALANGA	358.99	8.57
DB POWER	336.04	8.02
GUJARAT	297.51	7.10
JITPL	289.99	6.92
THERMAL POWERTECH	281.84	6.73
LANKO KONDAPALLI	245.68	5.87
COASTGEN	220.30	5.26
RAJASTHAN	206.18	4.92
JINDAL POWER	183.90	4.39
KORBA WEST POWER	156.66	3.74
MP	152.39	3.64
SHREE CEMENT	141.44	3.38
ADHUNIK POWER LTD	139.50	3.33
DELHI	137.31	3.28
SIMHAPURI	130.15	3.11
DVC	116.75	2.79
HIMACHAL PRADESH	91.32	2.18
GMR CHHATTISGARH	89.62	2.14
ANDHRA PRADESH	85.36	2.04
STERLITE	71.94	1.72
J & K	71.40	1.70
HARYANA	71.05	1.70
MEENAKSHI	56.21	1.34
PUNJAB	51.60	1.23
ODISHA	38.34	0.92
KARCHAM WANGTOO	27.65	0.66
JINDAL STAGE-II	26.50	0.63
WEST BENGAL	22.79	0.54
NSPCL	20.59	0.49
TELANGANA	14.83	0.35
DAGACHU	12.90	0.31
MEGHALAYA	9.20	0.22
ACBIL	9.09	0.22
MAHARASHTRA	5.57	0.13
ESSAR POWER	4.51	0.11
LANKO_AMK	4.37	0.10
UTTAR PRADESH	2.88	0.07
AD HYDRO	2.52	0.06
DCPP	2.38	0.06
TRIPURA	0.37	0.01
MANIPUR	0.29	0.01
UTTARAKHAND	0.20	0.00
MALANA	0.06	0.00
Total	4188.16	100.00
Volume Sold by top 5 Regional Entities	1564.36	37.35

Table-10: VOLUME OF ELECTRICITY PURCHASED THROUGH BILATERAL, APRIL 2016		
Name of the State/UT/Other Regional Entity	Volume of Purchase (MUs)	% of Volume
WEST BENGAL	872.16	19.96
TELANGANA	802.75	18.37
MAHARASHTRA	522.65	11.96
CHHATTISGARH	301.70	6.90
HARYANA	290.08	6.64
UTTAR PRADESH	247.15	5.66
BIHAR	195.90	4.48
UTTARAKHAND	189.11	4.33
ANDHRA PRADESH	144.72	3.31
JHARKHAND	143.16	3.28
ODISHA	131.35	3.01
TAMIL NADU	78.44	1.79
KERALA	58.84	1.35
ASSAM	57.47	1.32
NEPAL(NVVN)	53.53	1.23
GUJARAT	47.88	1.10
DADRA & NAGAR HAVELI	46.24	1.06
DELHI	39.55	0.91
ESSAR STEEL	28.91	0.66
KARNATAKA	23.80	0.54
GOA	20.02	0.46
MEGHALAYA	19.04	0.44
MP	17.30	0.40
J & K	17.05	0.39
PUNJAB	10.88	0.25
MANIPUR	3.47	0.08
TRIPURA	3.38	0.08
RAJASTHAN	1.97	0.05
HIMACHAL PRADESH	1.55	0.04
TOTAL	4370.08	100.00
Volume Purchased by top 5 Regional Entities	2789.34	63.83

**Table-11: VOLUME OF ELECTRICITY SOLD THROUGH POWER EXCHANGES,
APRIL 2016**

Name of the State/UT/Other Regional Entity	Volume of Sale (MUs)	% of Volume
JITPL	380.40	10.87
MP	323.99	9.25
GUJARAT	190.96	5.45
JINDAL POWER	182.32	5.21
HARYANA	150.94	4.31
STERLITE	148.45	4.24
DVC	129.40	3.70
RAJASTHAN	128.81	3.68
MEENAKSHI	125.44	3.58
KORBA WEST POWER	114.91	3.28
JAYPEE NIGRIE	112.54	3.21
DB POWER	99.19	2.83
PUNJAB	91.24	2.61
HIMACHAL PRADESH	90.36	2.58
BALCO	89.53	2.56
DCPP	83.03	2.37
MAHARASHTRA	81.21	2.32
ASSAM	71.99	2.06
ODISHA	65.35	1.87
KARCHAM WANGTOO	57.24	1.64
DELHI	55.63	1.59
WEST BENGAL	55.42	1.58
CHHATTISGARH	55.22	1.58
GMR CHHATTISGARH	46.72	1.33
SHREE CEMENT	46.43	1.33
ACBIL	42.77	1.22
NHPC STATIONS	42.21	1.21
DHARIWAL POWER	40.55	1.16
JINDAL STAGE-II	32.13	0.92
ADHUNIK POWER LTD	30.74	0.88
SPECTRUM	28.37	0.81
CHUZACHEN HEP	25.41	0.73
SIMHAPURI	25.26	0.72
AD HYDRO	24.19	0.69
TRIPURA	23.40	0.67
TELANGANA	22.29	0.64
NEEPCO STATIONS	21.93	0.63
GMR KAMALANGA	19.00	0.54
COASTGEN	17.10	0.49
MB POWER	15.81	0.45
J & K	13.84	0.40
NJPC	13.66	0.39
JORETHANG	13.43	0.38
MANIPUR	11.54	0.33
MIZORAM	8.46	0.24
RANGANADI HEP	8.11	0.23
MEGHALAYA	7.91	0.23
ANDHRA PRADESH	7.51	0.21

SIKKIM	6.38	0.18
IL & FS	4.15	0.12
KERALA	3.80	0.11
MAITHON POWER LTD	3.79	0.11
GOA	3.47	0.10
CHANDIGARH	2.00	0.06
MALANA	1.60	0.05
LANCO BUDHIL	1.47	0.04
THERMAL POWERTECH	0.99	0.03
ARUNACHAL PRADESH	0.60	0.02
DOYANG HEP	0.18	0.01
Total	3500.78	100.00
Volume sold by top 5 Regional Entities	1228.62	35.10

**Table-12: VOLUME OF ELECTRICITY PURCHASED THROUGH POWER EXCHANGES,
APRIL 2016**

Name of the State/UT/Other Regional Entity	Volume of Purchase (MUs)	% of Volume
BIHAR	437.56	12.50
GUJARAT	395.12	11.29
RAJASTHAN	388.28	11.09
ESSAR STEEL	309.66	8.85
ANDHRA PRADESH	237.93	6.80
HARYANA	216.29	6.18
UTTARAKHAND	209.17	5.97
MAHARASHTRA	176.70	5.05
PUNJAB	171.91	4.91
UTTAR PRADESH	166.05	4.74
WEST BENGAL	128.88	3.68
TELANGANA	114.80	3.28
KARNATAKA	103.49	2.96
DELHI	80.52	2.30
HIMACHAL PRADESH	65.97	1.88
KERALA	51.06	1.46
DAMAN AND DIU	38.57	1.10
J & K	37.34	1.07
ASSAM	32.12	0.92
JHARKHAND	29.15	0.83
TAMIL NADU	19.06	0.54
CHHATTISGARH	18.69	0.53
MP	13.89	0.40
ODISHA	11.32	0.32
CHANDIGARH	9.27	0.26
GOA	8.65	0.25
NAGALAND	8.27	0.24
TRIPURA	7.14	0.20
ARUNACHAL PRADESH	6.11	0.17
MEGHALAYA	6.07	0.17
MANIPUR	1.71	0.05
TOTAL	3500.78	100.00
Volume purchased by top 5 Regional Entities	1768.55	50.52

Table-13: VOLUME OF ELECTRICITY UNDER DRAWAL (EXPORTED) THROUGH DSM, APRIL 2016

Name of the State/UT/Other Regional Entity	Volume of Under drawal (MUs)	% of Volume
MAHARASHTRA	116.64	7.74
NTPC STATIONS-WR	108.11	7.18
HARYANA	90.65	6.02
UTTAR PRADESH	84.73	5.63
TAMIL NADU	82.82	5.50
NHPC STATIONS	74.71	4.96
MP	69.99	4.65
PUNJAB	64.57	4.29
RAJASTHAN	55.84	3.71
TELANGANA	52.20	3.47
DVC	49.97	3.32
CHHATTISGARH	45.63	3.03
GUJARAT	44.11	2.93
NTPC STATIONS-NR	42.79	2.84
BIHAR	42.70	2.84
KARNATAKA	34.28	2.28
ANDHRA PRADESH	30.99	2.06
UTTARAKHAND	26.33	1.75
DELHI	23.63	1.57
ESSAR STEEL	23.20	1.54
ASSAM	23.07	1.53
WEST BENGAL	20.94	1.39
NEEPCO STATIONS	19.36	1.29
ODISHA	16.58	1.10
NTPC STATIONS-ER	15.65	1.04
NTPC STATIONS-SR	15.12	1.00
CGPL	13.79	0.92
MANIPUR	10.50	0.70
JINDAL POWER	10.48	0.70
HIMACHAL PRADESH	10.48	0.70
DADRA & NAGAR HAVELI	10.21	0.68
JHARKHAND	9.89	0.66
TEESTA HEP	8.91	0.59
NJPC	8.86	0.59
SIKKIM	8.08	0.54
JITPL	7.69	0.51
MEGHALAYA	7.62	0.51
NSPCL	6.78	0.45
PONDICHERRY	6.53	0.43
JAYPEE NIGRIE	6.53	0.43
MAITHON POWER LTD	6.19	0.41
NAGALAND	5.69	0.38
DCPP	5.61	0.37
CHUZACHEN HEP	5.48	0.36
TRIPURA	5.13	0.34
KSK MAHANADI	4.34	0.29
LANKO_AMK	4.16	0.28
DAMAN AND DIU	4.06	0.27
GOA	3.76	0.25
ARUNACHAL PRADESH	3.64	0.24
RGPPPL(DABHOL)	3.53	0.23

BALCO	3.17	0.21
THERMAL POWERTECH	3.08	0.20
KARCHAM WANGTOO	2.87	0.19
GMR KAMALANGA	2.83	0.19
KORBA WEST POWER	2.74	0.18
KERALA	2.73	0.18
MIZORAM	2.73	0.18
MB POWER	2.41	0.16
AD HYDRO	2.33	0.15
COASTGEN	2.27	0.15
RANGIT HEP	2.16	0.14
CHANDIGARH	2.10	0.14
SIMHAPURI	2.09	0.14
IL & FS	1.92	0.13
JORETHANG	1.91	0.13
GMR CHHATTISGARH	1.84	0.12
STERLITE	1.67	0.11
URI-2	1.62	0.11
EMCO	1.49	0.10
SHREE CEMENT	1.22	0.08
ADHUNIK POWER LTD	1.12	0.07
ACBIL	0.97	0.06
DHARIWAL POWER	0.91	0.06
LOKTAK	0.88	0.06
LANCO BUDHIL	0.36	0.02
MEENAKSHI	0.30	0.02
DAGACHU	0.19	0.01
MALANA	0.18	0.01
VANDANA VIDYUT	0.03	0.00
ESSAR POWER	0.02	0.00
Total	1506.14	100.00
Volume Exported by top 5 Regional Entities	482.95	32.07

Table-14: VOLUME OF ELECTRICITY OVER DRAWAL (IMPORTED) THROUGH DSM, APRIL 2016		
Name of the State/UT/Other Regional Entity	Volume of Over drawal (MUs)	% of Volume
BIHAR	105.69	6.39
NTPC STATIONS-ER	98.95	5.98
JHARKHAND	80.71	4.88
UTTAR PRADESH	73.07	4.42
KARNATAKA	71.41	4.32
NTPC STATIONS-WR	70.75	4.28
KERALA	65.00	3.93
STERLITE	60.12	3.64
GUJARAT	58.25	3.52
HIMACHAL PRADESH	53.97	3.26
RAJASTHAN	48.75	2.95
ANDHRA PRADESH	45.65	2.76
CHHATTISGARH	45.55	2.75
ODISHA	42.45	2.57
NTPC STATIONS-NR	42.43	2.57
PUNJAB	42.23	2.55
WEST BENGAL	35.46	2.14
MAHARASHTRA	34.86	2.11
GOA	34.44	2.08
NTPC STATIONS-SR	32.23	1.95
TAMIL NADU	31.69	1.92
BALCO	30.42	1.84
ASSAM	29.83	1.80
HARYANA	28.86	1.75
DELHI	26.99	1.63
UTTARAKHAND	25.08	1.52
TELANGANA	22.83	1.38
MP	22.52	1.36
ESSAR STEEL	21.96	1.33
DVC	20.30	1.23
TRIPURA	18.89	1.14
CHANDIGARH	17.32	1.05
JITPL	15.08	0.91
ARUNACHAL PRADESH	12.46	0.75
CGPL	12.00	0.73
COASTGEN	10.87	0.66
GMR KAMALANGA	10.22	0.62
MB POWER	10.17	0.61
ADHUNIK POWER LTD	10.17	0.61
JAYPEE NIGRIE	9.59	0.58
KORBA WEST POWER	8.50	0.51
DAMAN AND DIU	6.33	0.38
GMR CHHATTISGARH	5.76	0.35
MEGHALAYA	5.72	0.35
NHPC STATIONS	5.58	0.34
KARCHAM WANGTOO	5.44	0.33
NAGALAND	5.41	0.33

IL & FS	5.22	0.32
MAITHON POWER LTD	5.09	0.31
JINDAL POWER	4.53	0.27
DB POWER	4.12	0.25
ESSAR POWER	3.89	0.23
NSPCL	3.87	0.23
MIZORAM	3.83	0.23
ACBIL	3.65	0.22
SHREE CEMENT	3.25	0.20
SIKKIM	3.09	0.19
NEEPCO STATIONS	2.98	0.18
MANIPUR	2.95	0.18
RGPPL(DABHOL)	2.94	0.18
NJPC	2.91	0.18
DCPP	2.55	0.15
DAGACHU	2.54	0.15
DGEN MEGA POWER	2.50	0.15
SIMHAPURI	2.30	0.14
PONDICHERRY	2.25	0.14
JORETHANG	2.06	0.12
CHUZACHEN HEP	1.91	0.12
EMCO	1.83	0.11
MEENAKSHI	1.78	0.11
LANCO BUDHIL	1.60	0.10
THERMAL POWERTECH	1.56	0.09
AD HYDRO	1.40	0.08
DADRA & NAGAR HAVELI	1.07	0.06
KSK MAHANADI	1.00	0.06
LANKO KONDAPALLI	0.81	0.05
RANGIT HEP	0.66	0.04
MALANA	0.43	0.03
LOKTAK	0.39	0.02
DHARIWAL POWER	0.34	0.02
SPECTRUM	0.23	0.01
URI-2	0.11	0.01
TEESTA HEP	0.10	0.01
LANKO_AMK	0.08	0.00
TOTAL	1653.76	100.00
Volume Imported by top 5 Regional Entities	429.83	25.99

Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), APRIL 2016		
Sr.No.	Name of the State/UT/Other Regional Entity	Total volume of net short-term transactions of electricity*
1	WEST BENGAL	937.35
2	TELANGANA	851.06
3	BIHAR	696.45
4	MAHARASHTRA	530.80
5	UTTAR PRADESH	398.66
6	UTTARAKHAND	396.84
7	ESSAR STEEL	337.33
8	ANDHRA PRADESH	304.44
9	CHHATTISGARH	265.10
10	JHARKHAND	243.14
11	HARYANA	222.59
12	KERALA	168.37
13	KARNATAKA	164.43
14	NTPC STATIONS-ER	83.29
15	ODISHA	64.86
16	GOA	55.88
17	NEPAL(NVVN)	53.53
18	RAJASTHAN	48.18
19	TAMIL NADU	46.37
20	DAMAN AND DIU	40.85
21	DADRA & NAGAR HAVELI	37.09
22	ASSAM	24.36
23	CHANDIGARH	22.49
24	PUNJAB	17.61
25	NTPC STATIONS-SR	17.11
26	ARUNACHAL PRADESH	14.33
27	NAGALAND	7.99
28	MEGHALAYA	6.10
29	DGEN MEGA POWER	2.50
30	TRIPURA	0.52
31	EMCO	0.34
32	VANDANA VIDYUT	-0.03
33	DOYANG HEP	-0.18
34	LANCO BUDHIL	-0.23
35	NTPC STATIONS-NR	-0.36
36	LOKTAK	-0.49
37	RGPPL(DABHOL)	-0.60
38	ESSAR POWER	-0.64
39	IL & FS	-0.86
40	MALANA	-1.41
41	RANGIT HEP	-1.50
42	URI-2	-1.51
43	CGPL	-1.80
44	KSK MAHANADI	-3.35
45	PONDICHERRY	-4.28
46	MAITHON POWER LTD	-4.90
47	MIZORAM	-7.36
48	MB POWER	-8.05

49	RANGANADI HEP	-8.11
50	LANKO_AMK	-8.44
51	TEESTA HEP	-8.82
52	DAGACHU	-10.55
53	SIKKIM	-11.38
54	JORETHANG	-13.27
55	MANIPUR	-14.20
56	NJPC	-19.60
57	NSPCL	-23.49
58	AD HYDRO	-27.65
59	SPECTRUM	-28.14
60	CHUZACHEN HEP	-28.99
61	J & K	-30.85
62	GUJARAT	-31.33
63	NTPC STATIONS-WR	-37.36
64	NEEPCO STATIONS	-38.32
65	DHARIWAL POWER	-41.11
66	ACBIL	-49.19
67	JINDAL STAGE-II	-58.63
68	BALCO	-62.28
69	DELHI	-69.51
70	HIMACHAL PRADESH	-70.67
71	KARCHAM WANGTOO	-82.32
72	DCPP	-88.48
73	JAYPEE NIGRIE	-109.47
74	NHPC STATIONS	-111.34
75	GMR CHHATTISGARH	-132.42
76	SIMHAPURI	-155.21
77	ADHUNIK POWER LTD	-161.20
78	STERLITE	-161.95
79	MEENAKSHI	-180.16
80	SHREE CEMENT	-185.84
81	COASTGEN	-228.80
82	LANKO KONDAPALLI	-244.86
83	KORBA WEST POWER	-265.81
84	DVC	-275.82
85	THERMAL POWERTECH	-284.34
86	GMR KAMALANGA	-370.61
87	JINDAL POWER	-372.17
88	DB POWER	-434.51
89	MP	-492.66
90	JITPL	-663.00

** Total volume of net short-term transactions of electricity includes net of transactions of electricity through bilateral, power exchange and UI*

(-) indicates sale and (+) indicates purchase

Table-16: DETAILS OF CONGESTION IN POWER EXCHANGES, APRIL 2016			
	Details of Congestion	IEX	PXIL
A	Unconstrained Cleared Volume* (MUs)	3762.58	53.63
B	Actual Cleared Volume and hence scheduled (MUs)	3465.19	48.37
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	297.40	5.25
D	Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume	7.90%	9.80%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	87.43%	20.00%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	25.66%	25.00%
	6.00 - 12.00 hours	28.40%	25.00%
	12.00 - 18.00 hours	27.52%	25.00%
	18.00 - 24.00 hours	18.43%	25.00%
<i>* This power would have been scheduled had there been no congestion.</i>			
<i>Source: IEX & PXIL & NLDC</i>			

Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (DAY-WISE) (MUs), APRIL 2016						Total Electricity Generation (MU) as given at CEA Website*
Date	Bilateral		Power Exchange (Area Clearing Volume# of Day Ahead Market)		Deviation Settlement (Over Drawl+Under Generation)	
	Through Traders and PXs**	Direct	IEX	PXIL		
1-Apr-16	81.41	51.88	111.42	0.04	61.51	3201.00
2-Apr-16	87.09	57.11	98.39	0.04	54.82	3236.59
3-Apr-16	80.38	55.74	110.92	0.04	53.75	3158.31
4-Apr-16	88.30	59.09	111.74	3.20	54.77	3289.65
5-Apr-16	84.09	54.25	120.95	2.05	57.21	3293.69
6-Apr-16	95.80	53.51	116.81	0.04	54.89	3260.97
7-Apr-16	99.96	55.48	122.84	0.04	53.43	3265.54
8-Apr-16	86.69	54.50	126.47	0.04	50.44	3255.25
9-Apr-16	85.16	60.85	122.80	0.04	54.15	3248.93
10-Apr-16	83.27	56.90	126.47	0.04	55.00	3179.37
11-Apr-16	87.18	61.48	123.10	0.04	54.66	3259.24
12-Apr-16	87.68	60.78	129.70	0.04	60.48	3309.16
13-Apr-16	84.52	61.17	133.59	0.40	58.17	3274.56
14-Apr-16	84.42	62.50	124.53	3.32	56.54	3318.44
15-Apr-16	83.39	58.63	127.75	0.70	55.33	3351.10
16-Apr-16	90.58	61.04	132.88	0.24	57.52	3355.37
17-Apr-16	73.89	58.76	119.95	0.76	58.71	3246.38
18-Apr-16	81.04	61.72	125.77	2.40	55.08	3402.88
19-Apr-16	83.31	61.05	113.60	0.71	53.35	3441.24
20-Apr-16	91.31	59.18	113.00	2.51	54.59	3460.66
21-Apr-16	93.08	58.60	112.26	2.51	62.48	3361.46
22-Apr-16	89.02	60.97	118.32	4.90	60.14	3283.25
23-Apr-16	92.61	61.34	102.37	4.67	56.10	3298.07
24-Apr-16	83.91	57.27	95.09	4.98	57.62	3216.74
25-Apr-16	81.60	53.29	88.81	3.95	56.98	3337.71
26-Apr-16	93.25	50.93	94.30	2.44	55.89	3392.71
27-Apr-16	91.58	54.87	102.66	3.46	59.05	3373.92
28-Apr-16	84.61	61.68	111.48	3.59	57.91	3439.34
29-Apr-16	87.28	66.59	107.53	0.04	57.71	3474.34
30-Apr-16	98.40	69.67	106.90	1.20	60.34	3407.14
Total	2614.82	1760.85	3452.40	48.37	1698.65	99393.01

Source: NLDC

* Gross Electricity Generation excluding electricity generation from renewables and captive power plants.

** The volume of bilateral through PXs represents the volume through term-ahead contracts.

Area Clearing Volume represents the scheduled volume of all the bid areas.

Table-18: PRICE OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (DAY-WISE)(₹/kWh), APRIL 2016									
Market Segment	Day ahead market of IEX			Day ahead market of PXIL			Under Drawl/Over Drawl from the Grid (DSM)		
Date	Mini-mum ACP	Maxi-mum ACP	Weighted Average Price*	Mini-mum ACP	Maxi-mum ACP	Weighted Average Price*	All India Grid		
							Mini-mum Price	Maxi-mum Price	Average Price**
1-Apr-16	2.28	5.81	2.91	2.60	2.60	2.60	0.00	5.32	1.87
2-Apr-16	1.10	4.71	2.90	2.85	2.85	2.85	0.00	6.16	1.96
3-Apr-16	1.75	5.40	2.76	2.60	2.60	2.60	0.00	3.45	1.52
4-Apr-16	1.90	4.74	2.95	2.70	2.70	2.70	0.00	7.20	2.64
5-Apr-16	1.29	4.93	3.07	2.70	2.70	2.70	0.00	3.45	1.69
6-Apr-16	1.87	5.41	3.38	2.90	2.90	2.90	0.00	6.16	1.56
7-Apr-16	2.00	6.62	3.19	3.00	3.00	3.00	0.00	5.11	2.30
8-Apr-16	2.00	6.11	2.98	3.00	3.00	3.00	0.00	5.11	1.96
9-Apr-16	1.75	7.51	2.83	2.90	2.90	2.90	0.00	4.91	1.79
10-Apr-16	1.75	4.71	2.69	2.75	2.75	2.75	0.00	5.11	2.08
11-Apr-16	1.90	5.86	2.86	2.70	2.70	2.70	0.00	5.11	2.43
12-Apr-16	2.00	5.92	3.12	2.80	2.80	2.80	0.00	4.91	1.65
13-Apr-16	2.30	7.10	3.13	3.00	3.00	3.00	0.00	5.95	1.63
14-Apr-16	2.07	5.96	3.09	2.11	4.20	2.86	0.00	5.74	2.41
15-Apr-16	1.99	6.15	2.96	3.00	3.00	3.00	0.00	5.11	2.08
16-Apr-16	1.90	6.15	2.97	2.98	2.98	2.98	0.00	5.74	2.03
17-Apr-16	1.10	5.35	2.77	2.90	2.90	2.90	0.00	3.45	1.33
18-Apr-16	0.90	6.15	2.82	2.70	2.70	2.70	0.00	3.24	1.33
19-Apr-16	0.80	6.15	2.62	3.00	3.00	3.00	0.00	3.24	1.95
20-Apr-16	0.90	5.51	2.67	2.70	2.70	2.70	0.00	6.36	2.28
21-Apr-16	1.50	5.20	2.71	2.70	2.70	2.70	0.00	3.45	1.55
22-Apr-16	1.27	5.52	2.77	2.70	2.70	2.70	0.00	3.45	1.67
23-Apr-16	1.64	6.19	2.85	2.70	2.70	2.70	0.00	5.11	1.75
24-Apr-16	1.64	6.16	2.73	2.69	2.69	2.69	0.00	6.36	1.82
25-Apr-16	1.64	10.00	2.71	2.72	2.72	2.72	0.71	5.74	2.50
26-Apr-16	1.89	6.76	2.83	2.70	2.70	2.70	0.36	7.20	3.32
27-Apr-16	2.11	6.61	2.85	2.71	2.71	2.71	0.00	6.36	2.83
28-Apr-16	2.31	6.61	3.20	2.72	2.72	2.72	0.00	6.36	1.67
29-Apr-16	2.19	7.65	3.17	2.71	2.71	2.71	0.00	4.91	1.72
30-Apr-16	2.26	7.65	3.34	2.68	2.68	2.68	0.00	6.16	1.34
	0.80#	10.00#	2.93	2.11#	4.20#	2.73	0#	7.20#	1.95**

Source: Data on price of PX transactions from IEX and PXIL and data on DSM Price from NLDC.

* Weighted average price computed based on Area Clearing Volume (ACV) and Area Clearing Price (ACP) for each hour of the day. Here, ACV and ACP represent the scheduled volume and weighted average price of all the bid areas of power exchanges.

** Simple average price of DSM of 96 time blocks of 15 minutes each in a day. DSM price includes Ceiling DSM Rate +40% additional DSM charge.

Maximum/Minimum in the month

Table-19: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY*-WISE) (MUs), APRIL 2016

Name of the State/UT/Other Regional Entity	Through Bilateral			Through Power Exchange			Through DSM with Regional Grid			Total Net***
	Sale	Purchase	Net**	Sale	Purchase	Net**	Import (Over Draw)	Export (Under Draw)	Net**	
PUNJAB	51.60	10.88	-40.72	91.24	171.91	80.67	42.23	64.57	-22.34	17.61
HARYANA	71.05	290.08	219.03	150.94	216.29	65.35	28.86	90.65	-61.79	222.59
RAJASTHAN	206.18	1.97	-204.21	128.81	388.28	259.47	48.75	55.84	-7.09	48.18
DELHI	137.31	39.55	-97.75	55.63	80.52	24.89	26.99	23.63	3.36	-69.51
UTTAR PRADESH	2.88	247.15	244.27	0.00	166.05	166.05	73.07	84.73	-11.66	398.66
UTTARAKHAND	0.20	189.11	188.91	0.00	209.17	209.17	25.08	26.33	-1.25	396.84
HIMACHAL PRADESH	91.32	1.55	-89.77	90.36	65.97	-24.39	53.97	10.48	43.48	-70.67
J & K	71.40	17.05	-54.36	13.84	37.34	23.50	0.00	0.00	0.00	-30.85
CHANDIGARH	0.00	0.00	0.00	2.00	9.27	7.27	17.32	2.10	15.22	22.49
MP	152.39	17.30	-135.09	323.99	13.89	-310.10	22.52	69.99	-47.47	-492.66
MAHARASHTRA	5.57	522.65	517.08	81.21	176.70	95.49	34.86	116.64	-81.78	530.80
GUJARAT	297.51	47.88	-249.63	190.96	395.12	204.16	58.25	44.11	14.14	-31.33
CHHATTISGARH	0.00	301.70	301.70	55.22	18.69	-36.53	45.55	45.63	-0.07	265.10
DAMAN AND DIU	0.00	0.00	0.00	0.00	38.57	38.57	6.33	4.06	2.28	40.85
DADRA & NAGAR HAVELI	0.00	46.24	46.24	0.00	0.00	0.00	1.07	10.21	-9.15	37.09
ANDHRA PRADESH	85.36	144.72	59.36	7.51	237.93	230.42	45.65	30.99	14.66	304.44
KARNATAKA	0.00	23.80	23.80	0.00	103.49	103.49	71.41	34.28	37.13	164.43
KERALA	0.00	58.84	58.84	3.80	51.06	47.26	65.00	2.73	62.27	168.37
TAMIL NADU	0.00	78.44	78.44	0.00	19.06	19.06	31.69	82.82	-51.13	46.37
PONDICHERRY	0.00	0.00	0.00	0.00	0.00	0.00	2.25	6.53	-4.28	-4.28
GOA	0.00	20.02	20.02	3.47	8.65	5.18	34.44	3.76	30.68	55.88
TELANGANA	14.83	802.75	787.92	22.29	114.80	92.51	22.83	52.20	-29.37	851.06
WEST BENGAL	22.79	872.16	849.37	55.42	128.88	73.46	35.46	20.94	14.52	937.35
ODISHA	38.34	131.35	93.01	65.35	11.32	-54.03	42.45	16.58	25.88	64.86
BIHAR	0.00	195.90	195.90	0.00	437.56	437.56	105.69	42.70	62.99	696.45
JHARKHAND	0.00	143.16	143.16	0.00	29.15	29.15	80.71	9.89	70.82	243.14
SIKKIM	0.00	0.00	0.00	6.38	0.00	-6.38	3.09	8.08	-5.00	-11.38
DVC	116.75	0.00	-116.75	129.40	0.00	-129.40	20.30	49.97	-29.67	-275.82
ARUNACHAL PRADESH	0.00	0.00	0.00	0.60	6.11	5.51	12.46	3.64	8.82	14.33
ASSAM	0.00	57.47	57.47	71.99	32.12	-39.87	29.83	23.07	6.75	24.36
MANIPUR	0.29	3.47	3.17	11.54	1.71	-9.83	2.95	10.50	-7.55	-14.20
MEGHALAYA	9.20	19.04	9.84	7.91	6.07	-1.84	5.72	7.62	-1.90	6.10

MIZORAM	0.00	0.00	0.00	8.46	0.00	-8.46	3.83	2.73	1.10	-7.36
NAGALAND	0.00	0.00	0.00	0.00	8.27	8.27	5.41	5.69	-0.28	7.99
TRIPURA	0.37	3.38	3.01	23.40	7.14	-16.25	18.89	5.13	13.76	0.52
NTPC STATIONS-NR	0.00	0.00	0.00	0.00	0.00	0.00	42.43	42.79	-0.36	-0.36
NHPC STATIONS	0.00	0.00	0.00	42.21	0.00	-42.21	5.58	74.71	-69.13	-111.34
NJPC	0.00	0.00	0.00	13.66	0.00	-13.66	2.91	8.86	-5.94	-19.60
AD HYDRO	2.52	0.00	-2.52	24.19	0.00	-24.19	1.40	2.33	-0.93	-27.65
KARCHAM WANGTOO	27.65	0.00	-27.65	57.24	0.00	-57.24	5.44	2.87	2.58	-82.32
SHREE CEMENT	141.44	0.00	-141.44	46.43	0.00	-46.43	3.25	1.22	2.03	-185.84
LANCO BUDHIL	0.00	0.00	0.00	1.47	0.00	-1.47	1.60	0.36	1.24	-0.23
MALANA	0.06	0.00	-0.06	1.60	0.00	-1.60	0.43	0.18	0.25	-1.41
URI-2	0.00	0.00	0.00	0.00	0.00	0.00	0.11	1.62	-1.51	-1.51
NTPC STATIONS-WR	0.00	0.00	0.00	0.00	0.00	0.00	70.75	108.11	-37.36	-37.36
JINDAL POWER	183.90	0.00	-183.90	182.32	0.00	-182.32	4.53	10.48	-5.95	-372.17
LANKO_AMK	4.37	0.00	-4.37	0.00	0.00	0.00	0.08	4.16	-4.08	-8.44
NSPCL	20.59	0.00	-20.59	0.00	0.00	0.00	3.87	6.78	-2.90	-23.49
ACBIL	9.09	0.00	-9.09	42.77	0.00	-42.77	3.65	0.97	2.67	-49.19
BALCO	0.00	0.00	0.00	89.53	0.00	-89.53	30.42	3.17	27.26	-62.28
RGPPL(DABHOL)	0.00	0.00	0.00	0.00	0.00	0.00	2.94	3.53	-0.60	-0.60
CGPL	0.00	0.00	0.00	0.00	0.00	0.00	12.00	13.79	-1.80	-1.80
DCPP	2.38	0.00	-2.38	83.03	0.00	-83.03	2.55	5.61	-3.07	-88.48
EMCO	0.00	0.00	0.00	0.00	0.00	0.00	1.83	1.49	0.34	0.34
VANDANA VIDYUT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	-0.03	-0.03
ESSAR STEEL	0.00	28.91	28.91	0.00	309.66	309.66	21.96	23.20	-1.24	337.33
KSK MAHANADI	0.00	0.00	0.00	0.00	0.00	0.00	1.00	4.34	-3.35	-3.35
ESSAR POWER	4.51	0.00	-4.51	0.00	0.00	0.00	3.89	0.02	3.87	-0.64
JINDAL STAGE-II	26.50	0.00	-26.50	32.13	0.00	-32.13	0.00	0.00	0.00	-58.63
DB POWER	336.04	0.00	-336.04	99.19	0.00	-99.19	4.12	3.42	0.71	-434.51
DHARIWAL POWER	0.00	0.00	0.00	40.55	0.00	-40.55	0.34	0.91	-0.56	-41.11
JAYPEE NIGRIE	0.00	0.00	0.00	112.54	0.00	-112.54	9.59	6.53	3.07	-109.47
DGEN MEGA POWER	0.00	0.00	0.00	0.00	0.00	0.00	2.50	0.00	2.50	2.50
GMR CHHATTISGARH	89.62	0.00	-89.62	46.72	0.00	-46.72	5.76	1.84	3.92	-132.42
KORBA WEST POWER	156.66	0.00	-156.66	114.91	0.00	-114.91	8.50	2.74	5.76	-265.81
MB POWER	0.00	0.00	0.00	15.81	0.00	-15.81	10.17	2.41	7.76	-8.05
SPECTRUM	0.00	0.00	0.00	28.37	0.00	-28.37	0.23	0.00	0.23	-28.14
NTPC STATIONS-SR	0.00	0.00	0.00	0.00	0.00	0.00	32.23	15.12	17.11	17.11
LANKO KONDAPALLI	245.68	0.00	-245.68	0.00	0.00	0.00	0.81	0.00	0.81	-244.86

SIMHAPURI	130.15	0.00	-130.15	25.26	0.00	-25.26	2.30	2.09	0.20	-155.21
MEENAKSHI	56.21	0.00	-56.21	125.44	0.00	-125.44	1.78	0.30	1.49	-180.16
COASTGEN	220.30	0.00	-220.30	17.10	0.00	-17.10	10.87	2.27	8.61	-228.80
THERMAL POWERTECH	281.84	0.00	-281.84	0.99	0.00	-0.99	1.56	3.08	-1.52	-284.34
IL & FS	0.00	0.00	0.00	4.15	0.00	-4.15	5.22	1.92	3.30	-0.86
NTPC STATIONS-ER	0.00	0.00	0.00	0.00	0.00	0.00	98.95	15.65	83.29	83.29
STERLITE	71.94	0.00	-71.94	148.45	0.00	-148.45	60.12	1.67	58.45	-161.95
MAITHON POWER LTD	0.00	0.00	0.00	3.79	0.00	-3.79	5.09	6.19	-1.10	-4.90
ADHUNIK POWER LTD	139.50	0.00	-139.50	30.74	0.00	-30.74	10.17	1.12	9.04	-161.20
CHUZACHEN HEP	0.00	0.00	0.00	25.41	0.00	-25.41	1.91	5.48	-3.57	-28.99
RANGIT HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.66	2.16	-1.50	-1.50
GMR KAMALANGA	358.99	0.00	-358.99	19.00	0.00	-19.00	10.22	2.83	7.39	-370.61
JITPL	289.99	0.00	-289.99	380.40	0.00	-380.40	15.08	7.69	7.38	-663.00
TEESTA HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.10	8.91	-8.82	-8.82
DAGACHU	12.90	0.00	-12.90	0.00	0.00	0.00	2.54	0.19	2.35	-10.55
JORETHANG	0.00	0.00	0.00	13.43	0.00	-13.43	2.06	1.91	0.16	-13.27
NEPAL(NVVN)	0.00	53.53	53.53	0.00	0.00	0.00	0.00	0.00	0.00	53.53
NEEPCO STATIONS	0.00	0.00	0.00	21.93	0.00	-21.93	2.98	19.36	-16.38	-38.32
RANGANADI HEP	0.00	0.00	0.00	8.11	0.00	-8.11	0.00	0.00	0.00	-8.11
DOYANG HEP	0.00	0.00	0.00	0.18	0.00	-0.18	0.00	0.00	0.00	-0.18
LOKTAK	0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.88	-0.49	-0.49
TOTAL	4188.16	4370.08	181.92	3500.78	3500.78	0.00	1653.76	1506.14	147.62	329.54
Source: NLDC										
* in case of a state, the entities which are "selling" also include generators connected to state grid and the entities which are "buying" also include open access consumers.										
** (-) indicates sale and (+) indicates purchase,										
*** Total net includes net of transactions through bilateral, power exchange and DSM										

Figure 7: Bilateral Contracts Executed by Traders in May, 2016
Percentage

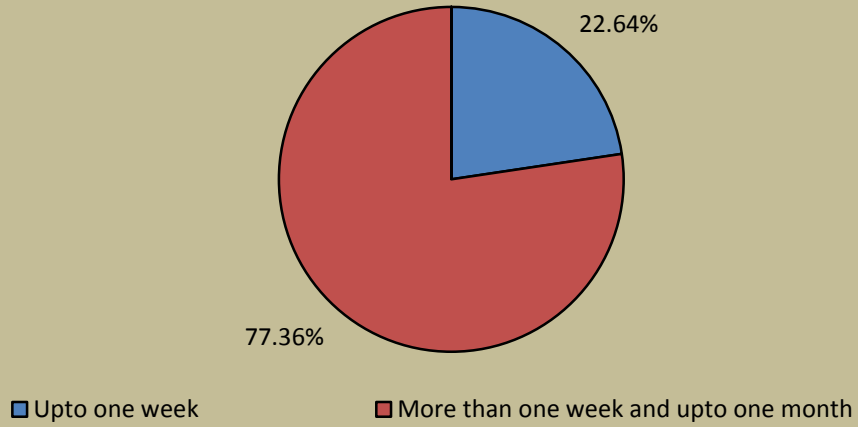


Figure-8: Forward Curve based on Prices of Bilateral Contracts

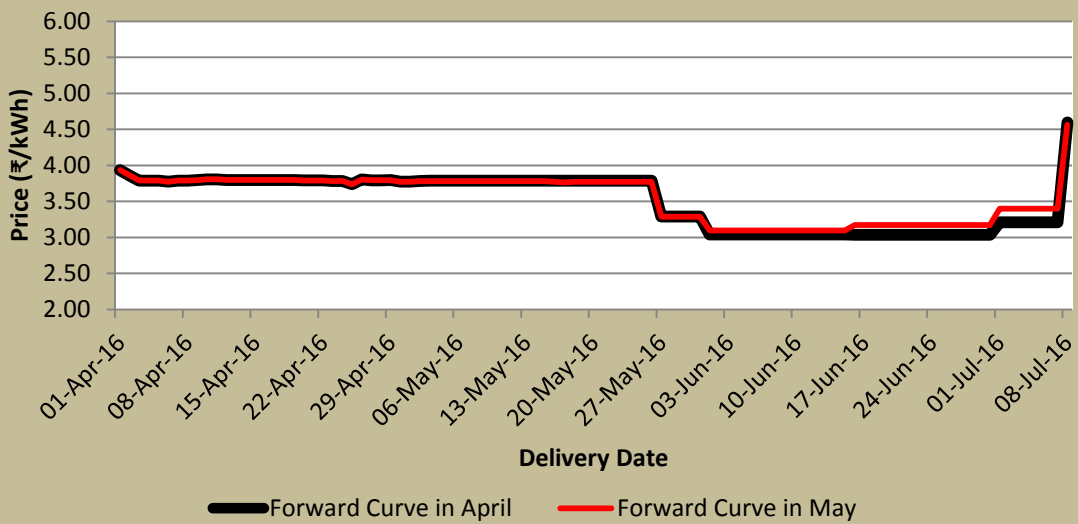


Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs) TRANSACTIONED THROUGH POWER EXCHANGES, APRIL 2016					
Sr.No.	Details of REC Transactions	IEX		PXIL	
		Solar	Non-Solar	Solar	Non Solar
A	Volume of Buy Bid	22958	238485	2695	51972
B	Volume of Sell Bid	2348055	8980430	1045312	3701657
C	Ratio of Buy Bid to Sell Bid Volume	0.010	0.027	0.003	0.014
D	Market Clearing Volume (MWh)	22958	238485	2695	51972
E	Market Clearing Price (₹/MWh)	3500	1500	3500	1500

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

Note 2:

Forbearance and Floor Price w.e.f 1st March 2015		
Type of REC	Floor Price (₹/MWh)	Forbearance Price (₹/MWh)
Solar	3500.00	5800.00
Non-Solar	1500.00	3300.00