

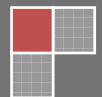


Monthly Report on Short-term Transactions of Electricity in India

April, 2013



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Abbreviations

Abbreviation	Expanded Version
ACBIL	ACB (India) Limited
ACP	Area Clearing Price
ACV	Area Clearing Volume
AD HYDRO	AD Hydro Power Limited
ADANI HVDC	Adani Power Ltd. (HVDC Mundra)
BALCO	Bharat Aluminium Company Limited
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
CGPL	Coastal Gujarat Power Limited
DCPP	Donga Mahua Captive Power Plant
DVC	Damodar Valley Corporation
EMCO	EMCO Energy Limited
IEX	Indian Energy Exchange Limited
J&K	Jammu & Kashmir
JINDAL POWER	Jindal Power Limited
KARCHAM WANGTOO	Jaypee Karcham Hydro Corporation Limited
LANCO BUDHIL	Lanco Budhil Hydro Power Private Limited
LANCO_AMK	Lanco Amarkantak Power Private Limited
LANCO_KONDAPALLY	Lanco Kondapalli Power Limited
Meenakshi	Meenakshi Energy Private Limited
MP	Madhya Pradesh
MUs	Million Units
NEEPCO Stations	North Eastern Electric Power Corporation Limited. Stations
NEW Grid	North, East, North-East and Western Regional Grid
NHPC Stations	National Hydro Electric Power Corporation Ltd. Stations
NJPC	Nathpa Jhakri Hydroelectric Power Station
NLDC	National Load Despatch Centre
NSPCL	NTPC - SAIL Power Company Private Limited
PX	Power Exchange
PXIL	Power Exchange India Limited
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
SR Grid	Southern Regional Grid
STERLITE	Sterlite Energy Limited
UI	Unscheduled Interchange
UT	Union Territory

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 Unscheduled Interchange (UI). 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 provide information on volume and price of Renewable Energy Certificates (RECs) transacted through power exchanges; and (v) to disclose/disseminate all relevant market information. The analysis of the report for the month of April 2013 is as under:

I: Volume of Short-term Transactions of Electricity

During the month of April 2013, total electricity generation excluding generation from renewable and captive power plants in India was 77557.10 MUs (Table-1).

Of the total electricity generation, 7605.62 MUs (9.81%) were transacted through short-term, comprising of 3448.80 MUs (4.45%) through Bilateral (through traders and term-ahead contracts on Power Exchanges and directly between distribution companies), followed by 2576.54 MUs (3.32%) through day ahead collective transactions on Power Exchanges (IEX and PXIL) and 1580.28 MUs (2.04%) through UI (Table-1 & Figure-2).

Of the total short-term transactions, Bilateral constitute 45.35% (35.46% through traders and term-ahead contracts on Power Exchanges and 9.89% directly between distribution companies) followed by 33.88% through day ahead collective transactions on Power Exchanges and 20.78% through UI (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 trading licensees is provided in Table-2 & Figure-4. The trading licensees undertake electricity transactions through bilateral and through power exchanges. Here, the volume of electricity transacted by the trading licensees includes bilateral

transactions and the transactions undertaken through power exchanges. There were 42 trading licensees as on 30.04.2013, of which only 21 have engaged in trading during April 2013. Top 5 trading licensees had a share of 68.91% in the total volume traded by all the licensees.

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 power, whereas decrease indicates the opposite. The HHI below 0.15 indicates non-concentration of market power. The HHI computed for volume of electricity traded by trading licensees (inter-state & intra-state) was 0.1174 for the month of April 2013, which indicates that there was no concentration of market power (Table-2).

The volume of electricity transacted through IEX and PXIL in the day ahead market was 2515.68 MUs and 60.86 MUs respectively. The volume of total Buy bids and Sale bids was 3958.66 MUs and 3663.90 MUs respectively in IEX and 250.63 MUs and 162.49 MUs respectively in PXIL. The gap between the volume of buy bids and sale bids placed through power exchanges shows that there was more demand in IEX (1.08 times) and PXIL (1.54 times) when compared with the supply offered through these exchanges.

The volume of electricity transacted through IEX and PXIL in the term-ahead market was 7.48 MUs and 19.71 MUs respectively (Table-6 & Table-7).

II: Price of Short-term Transactions of Electricity

(i) Price of electricity transacted through Traders: Weighted average sale price has been computed for the electricity transacted through traders and it was ₹4.55/kWh. Weighted average sale price was also computed for the transactions during Round the Clock (RTC), Peak, and Off-Peak periods separately, and the sale prices were ₹4.60/kWh, ₹4.63/kWh and ₹4.12/kWh respectively. Minimum and Maximum sale prices were ₹2.90/kWh and ₹8.04/kWh respectively (Table-3 & 4).

(ii) Price of electricity transacted Through Power Exchanges: 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 ₹1.31/kWh, ₹19.60/kWh and ₹3.74/kWh respectively in IEX and ₹1.31/kWh, ₹5.00/kWh and ₹2.71/kWh respectively in PXIL (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹3.14/kWh and ₹3.38/kWh respectively (Table-6 and Table-7).

(iii) Price of electricity transacted Through UI: All-India UI price has been computed for NEW Grid and SR Grid separately. The average UI price was ₹2.27/kWh in the NEW Grid and ₹4.29/kWh in the SR Grid. Minimum and Maximum UI prices were ₹0.00/kWh and ₹10.80/kWh respectively in the New Grid, and ₹0.00/kWh and ₹10.80/kWh respectively in the SR Grid (Table-8).

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

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

Of the total bilateral transactions, top 5 regional entities sold 48.87% of the volume, and these were Sterlite, Karnataka, Damodar Valley Corporation, Jindal Power Limited and UT Chandigarh. Top 5 regional entities purchased 58.49% of the volume, and these were West Bengal, Tamilnadu, Gujarat, Andhra Pradesh and Kerala (Table-9, 10 & 19).

Of the total Power Exchange transactions, top 5 regional entities sold 63.39% of the volume, and these were Gujarat, Karnataka, Delhi, Madhya Pradesh and Haryana. Top 5 regional entities purchased 66.64% of the volume, and these were Gujarat, Maharashtra, Andhra Pradesh, Punjab and Rajasthan (Table-11, 12 & 19).

Of the total UI transactions, top 5 regional entities underdrew 38.59% of the volume, and these were Uttar Pradesh, Rajasthan, Madhya Pradesh, Maharashtra and Delhi. Top 5 regional entities overdrew 37.25% of the volume, and these were Chattisgarh, Maharashtra, Uttar Pradesh, Haryana and Gujarat (Table-13, 14 & 19).

Regional entity-wise total volume of net short-term transactions of electricity i.e. volume of net transactions through bilateral, power exchanges and UI is shown in Table-15 & 19. Top 5 electricity selling regional entities were Karnataka, Sterlite Energy Limited, Delhi, Jindal Power Limited and Damodar Valley Corporation. Top 5 electricity purchasing regional entities were Tamilnadu, Andhra Pradesh, West Bengal, Maharashtra and Chattisgarh.

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.

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 2013, congestion occurred in both the power exchanges, the details of which 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.

During the month, the volume of electricity that could not be cleared in the power exchanges due to congestion was 17.17% and 56.37% of the unconstrained cleared volume in IEX and PXIL, respectively. In terms of time, congestion occurred was 100.00% in both the power exchanges.

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.

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

The concept of Renewable Energy Certificates (RECs) seeks to address mismatch between availability of renewable energy sources 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 market in electricity.

One REC is equivalent to 1 MWh of 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 2013 are shown in Table-20. The market clearing volume of Solar RECs transacted on IEX and PXIL were 1005 and 1212 respectively and the market clearing price of these RECs were ₹12206/MWh and ₹12000/MWh on IEX and PXIL respectively. Market clearing volume of Non-Solar RECs transacted on IEX and PXIL were 10670 and 33789 respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

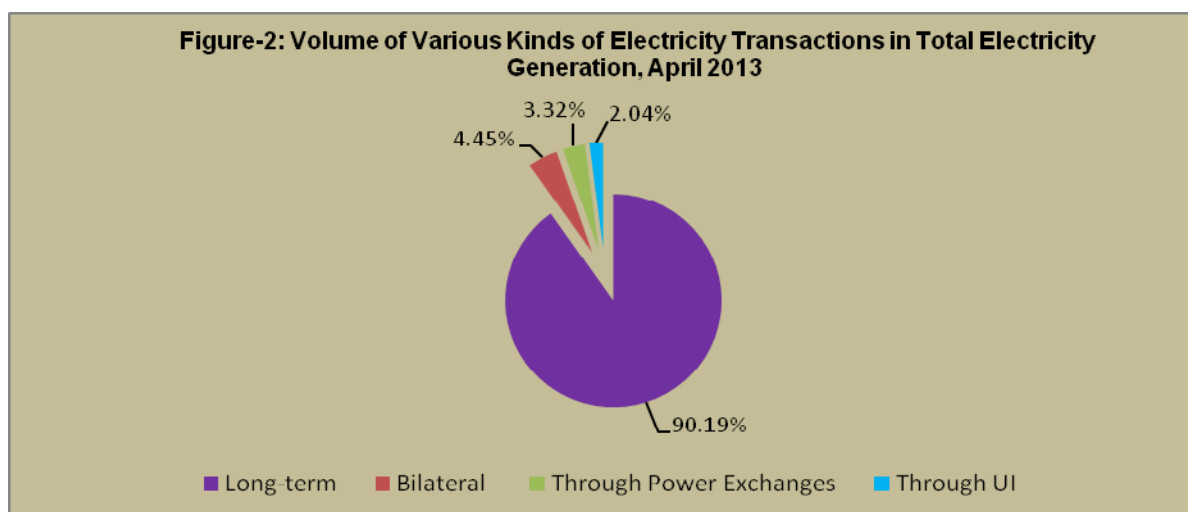
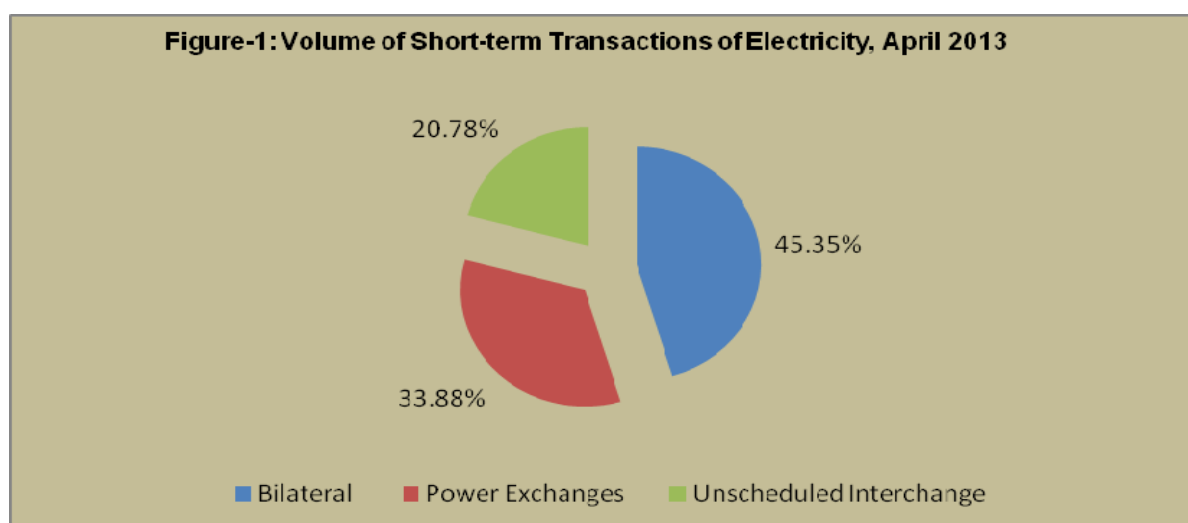
The gap between the volume of buy and sell bids of RECs placed through power exchanges shows that there was more demand for Solar RECs and less demand for Non-Solar RECs. For Solar RECs, the ratio of buy and sell bids was 1.36 and 0.95 in IEX and PXIL respectively. For Non-Solar RECs, the ratio of buy and sell bids was 0.01 and 0.05 in IEX and PXIL respectively.

VI: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 9.81%.
- Of the total short-term transactions of electricity, 45.35% was transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies), followed by 33.88% through Power Exchanges and 20.78% through UI.
- Top 5 trading licensees had a share of 68.91% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for volume of electricity traded by trading licensees was 0.1174, indicating a moderate concentration of market power.
- The price of electricity transacted through trading licensees (₹4.55/kWh) was higher when compared with the price of electricity transacted through IEX (₹3.74/kWh) and PXIL (₹2.71/kWh) respectively.
- The price of electricity transacted through UI was ₹2.27/kWh in the NEW Grid and ₹4.29/kWh in the SR Grid.
- The gap between the volume of buy bids and sale bids placed through power exchanges indicates that there was more demand in IEX (1: 1.08) and PXIL (1: 1.54) when compared with the supply offered through these exchanges.
- Top 5 electricity selling regional entities were Karnataka, Sterlite Energy Limited, Delhi, Jindal Power Limited and Damodar Valley Corporation. Top 5 electricity purchasing regional entities were Tamilnadu, Andhra Pradesh, West Bengal, Maharashtra and Chattisgarh.
- The volume of electricity that could not be cleared in the power exchanges due to congestion was 17.17% and 56.37% of the unconstrained cleared volume in IEX and PXIL, respectively. In terms of time, congestion occurred was 100.00% in both the power exchanges.
- The market clearing volume of Solar RECs transacted on IEX and PXIL were 1005 and 1212 respectively and the market clearing price of these RECs were ₹12206/MWh and ₹12000/MWh on IEX and PXIL respectively. Market clearing volume of Non-Solar RECs transacted on IEX and PXIL were 10670 and 33789 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 IN INDIA, APRIL 2013				
Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	3448.80	45.35%	4.45%
	(i) Through Traders and PXs	2696.65	35.46%	3.48%
	(ii) Direct	752.15	9.89%	0.97%
2	Through Power Exchanges	2576.54	33.88%	3.32%
	(i) IEX	2515.68	33.08%	3.24%
	(ii) PXIL	60.86	0.80%	0.08%
3	Through UI	1580.28	20.78%	2.04%
	Total	7605.62	100.00%	9.81%
	Total Generation	77557.10	–	–

Source: NLDC



**Figure-3: Volume of Short-term Transactions of Electricity, April 2013
(Day-wise)**

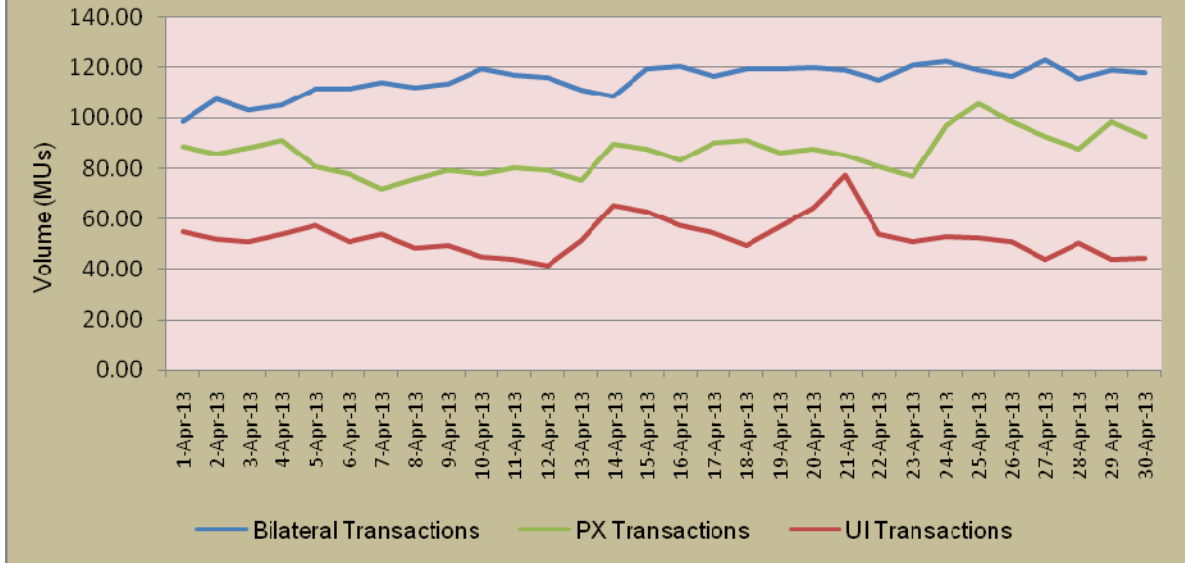


Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, APRIL 2013

Sr.No	Name of the Trading Licensee	% Share in total Volume transacted by Trading Licensees	Herfindahl-Hirschman Index
1	PTC India Ltd.	22.83%	0.0521
2	JSW Power Trading Company Ltd.	13.04%	0.0170
3	NTPC Vidyut Vyapar Nigam Ltd.	12.43%	0.0155
4	Tata Power Trading Company (P) Ltd.	12.16%	0.0148
5	Reliance Energy Trading (P) Ltd	8.44%	0.0071
6	Adani Enterprises Ltd.	5.50%	0.0030
7	Pune Power Development Pvt. Ltd.	5.11%	0.0026
8	Shree Cement Ltd.	4.27%	0.0018
9	Knowledge Infrastructure Systems (P) Ltd	3.14%	0.0010
10	GMR Energy Trading Ltd.	3.04%	0.0009
11	Jaiprakash Associates Ltd.	2.34%	0.0005
12	Mittal Processors (P) Ltd.	1.85%	0.0003
13	Instinct Infra & Power Ltd.	1.44%	0.0002
14	National Energy Trading & Services Ltd.	1.30%	0.0002
15	Manikaran Power Ltd.	0.90%	0.0001
16	RPG Power Trading Company Ltd.	0.77%	0.0001
17	Essar Electric Power Development Corp. Ltd.	0.60%	0.0000
18	Arunachal Pradesh Power Corporation Pvt. Ltd.	0.33%	0.0000
19	Ambitious Power Trading Company Ltd.	0.33%	0.0000
20	Indrajit Power Technology (P) Ltd.	0.11%	0.0000
21	Customized Energy Solutions India Pvt. Ltd.	0.06%	0.0000
TOTAL		100.00%	0.1174
Top 5 trading licensees		68.91%	
<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 2013

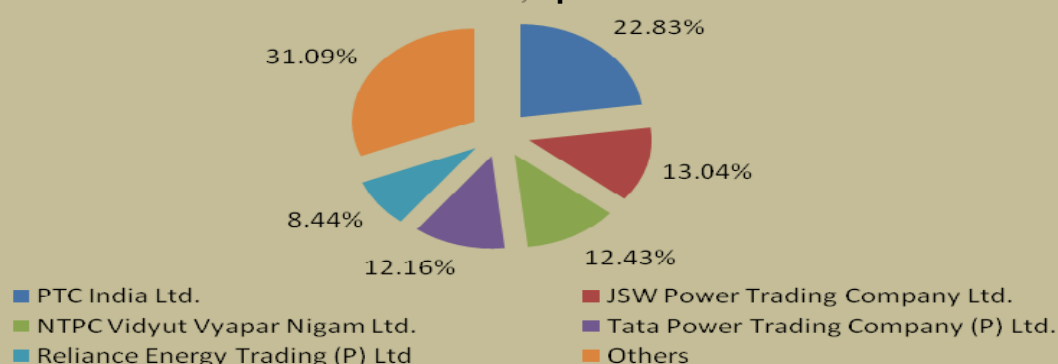


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, APRIL 2013		
Sr.No		Sale Price of Traders (₹/kWh)
1	Minimum	2.90
2	Maximum	8.04
3	Weighted Average	4.55

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), APRIL 2013		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	4.60
2	PEAK	4.63
3	OFF PEAK	4.12

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, APRIL 2013			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	1.31	1.31
2	Maximum	19.60	5.00
3	Weighted Average	3.74	2.71

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, APRIL 2013			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	6.39	3.07
2	Day-ahead Contingency Contracts	0.34	3.93
3	Weekly Contracts	0.75	3.35
	Total	7.48	3.14

Source: IEX

Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, APRIL 2013			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	1.23	3.30
2	Weekly Contracts	18.48	3.38
	Total	19.71	3.38

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH UI, APRIL 2013			
Sr.No		Price in NEW Grid (₹/kWh)	Price in SR Grid (₹/kWh)
1	Minimum	0.00	0.00
2	Maximum	10.80	10.80
3	Average	2.27	4.29

Source: NLDC

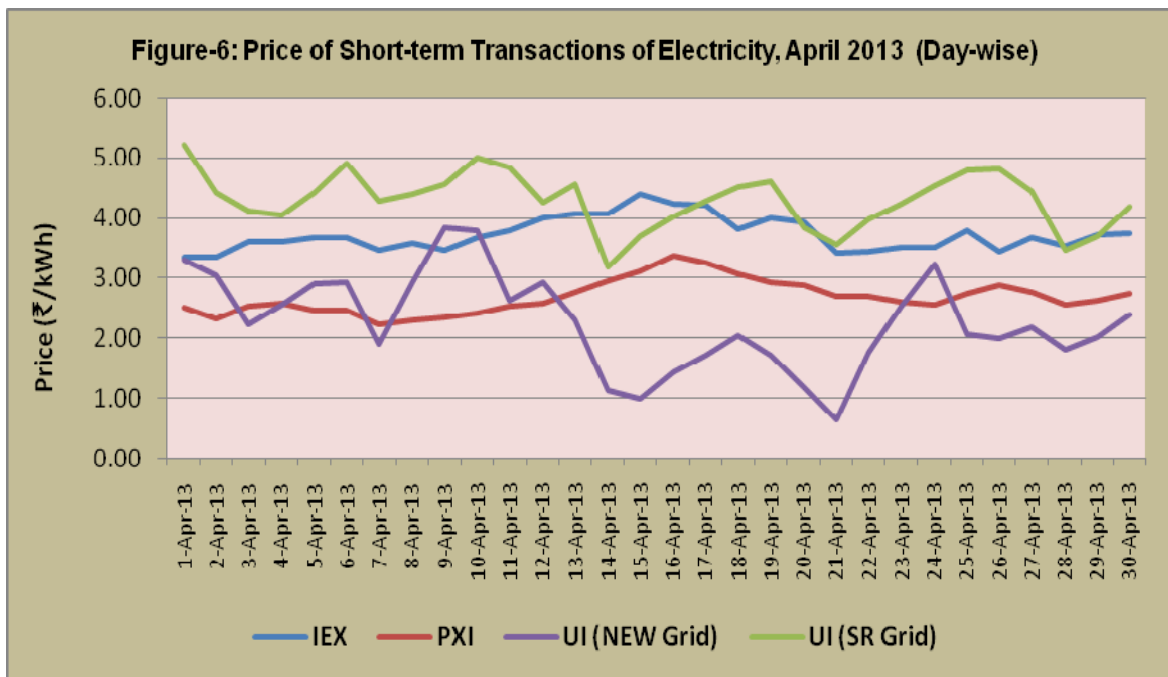
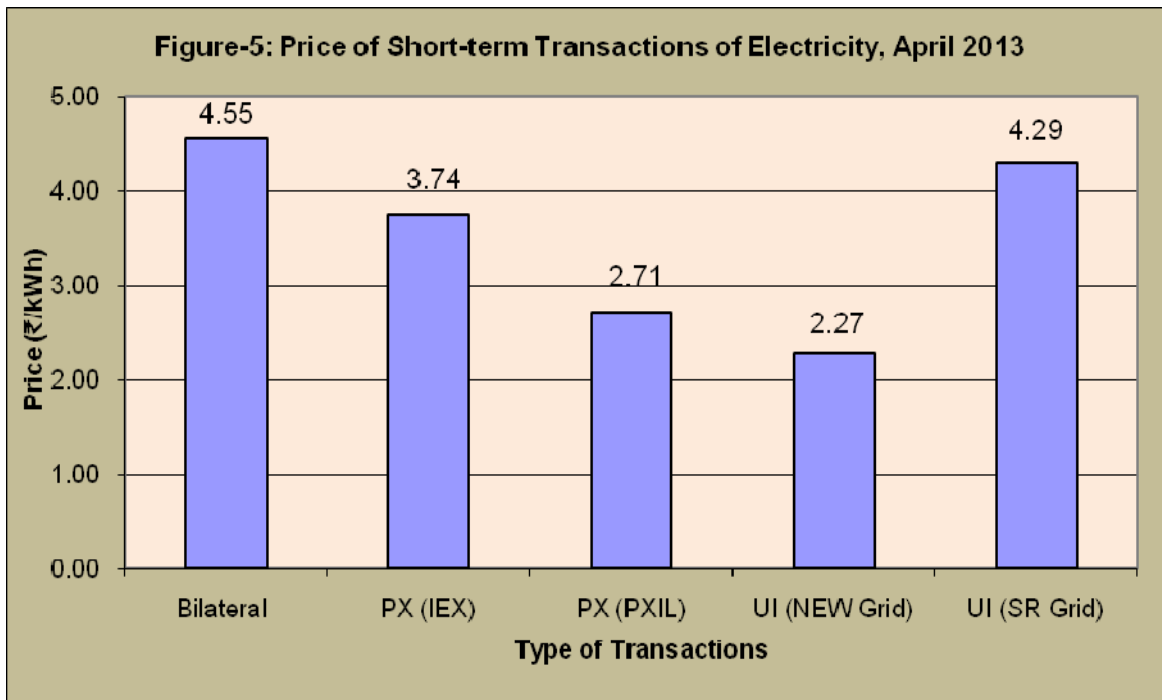


Table-9: VOLUME OF ELECTRICITY SALE THROUGH BILATERAL, APRIL 2013		
Name of the State/UT/Other Regional Entity	Volume of Sale (MUs)	% of Volume
STERLITE	489.91	13.67%
Karnataka	382.19	10.66%
DVC	340.09	9.49%
JINDAL POWER	273.42	7.63%
UT Chandigarh	266.30	7.43%
Rajasthan	226.15	6.31%
Orissa	215.66	6.02%
Delhi	173.28	4.83%
Gujarat	158.88	4.43%
West Bengal	138.64	3.87%
J & K	137.67	3.84%
SHREE CEMENT	133.99	3.74%
Haryana	127.41	3.55%
Punjab	120.53	3.36%
KARCHAM WANGTOO	102.50	2.86%
Himachal Pradesh	90.11	2.51%
Uttar Pradesh	74.38	2.07%
MAITHON POWER LTD	64.16	1.79%
Jharkhand	22.10	0.62%
AD HYDRO	19.95	0.56%
ACBIL	10.63	0.30%
MP	6.34	0.18%
Tripura	3.83	0.11%
Meghalaya	3.44	0.10%
Chattisgarh	2.40	0.07%
Maharashtra	1.08	0.03%
Total	3585.01	100.00%
Volume of sale by top 5 States	1751.91	48.87%

Table-10: VOLUME OF ELECTRICITY PURCHASE THROUGH BILATERAL, APRIL 2013		
Name of the State/UT/Other Regional Entity	Volume of Purchase (MUs)	% of Volume
West Bengal	705.96	20.48%
Tamilnadu	494.85	14.36%
Gujarat	282.82	8.21%
Andhra Pradesh	281.43	8.16%
Kerala	250.92	7.28%
Bihar	207.32	6.01%
Uttarakhand	153.64	4.46%
Delhi	133.63	3.88%
Uttar Pradesh	124.04	3.60%
Jharkhand	113.19	3.28%
Maharashtra	106.35	3.09%
Chattisgarh	80.22	2.33%
Assam	76.10	2.21%
DVC	72.67	2.11%
Dadra & Nagar Haveli	70.70	2.05%
Rajasthan	61.61	1.79%
Haryana	49.86	1.45%
J & K	47.58	1.38%
MP	39.03	1.13%
Himachal Pradesh	35.46	1.03%
Meghalaya	17.04	0.49%
Tripura	14.75	0.43%
UT Chandigarh	12.04	0.35%
Orissa	7.60	0.22%
Goa	4.80	0.14%
Sikkim	1.90	0.06%
Meenakshi	0.95	0.03%
Nagaland	0.34	0.01%
Total	3446.80	100.00%
Volume of sale by top 5 States	2015.98	58.49%

Table-11: VOLUME OF ELECTRICITY SALE THROUGH POWER EXCHANGES, APRIL 2013		
Name of the State/UT/Other Regional Entity	Volume of Sale (MUs)	% of Volume
Gujarat	520.46	20.20%
Karnataka	416.54	16.17%
Delhi	347.21	13.48%
MP	192.89	7.49%
Haryana	156.18	6.06%
JINDAL POWER	145.77	5.66%
STERLITE	143.05	5.55%
KARCHAM WANGTOO	137.46	5.34%
West Bengal	107.10	4.16%
Andhra Pradesh	81.00	3.14%
MAITHON POWER LTD	39.23	1.52%
SHREE CEMENT	37.26	1.45%
EMCO	34.36	1.33%
Himachal Pradesh	34.27	1.33%
ACBIL	29.27	1.14%
NHPC Stations	25.60	0.99%
Maharashtra	24.67	0.96%
Rajasthan	16.22	0.63%
DVC	16.09	0.62%
DCPP	15.90	0.62%
Sikkim	13.71	0.53%
SIMHAPURI	7.93	0.31%
LANCO BUDHIL	7.48	0.29%
AD HYDRO	6.28	0.24%
Chattisgarh	5.97	0.23%
NEEPCO Stations	4.53	0.18%
Orissa	4.27	0.17%
UT Chandigarh	2.97	0.12%
ADHUNIK POWER LTD	1.32	0.05%
J & K	1.08	0.04%
BALCO	0.26	0.01%
Meghalaya	0.11	0.00%
Uttarakhand	0.11	0.00%
Total	2576.54	100.00%
Volume of sale by top 5 States	1633.28	63.39%

Table-12: VOLUME OF ELECTRICITY PURCHASE THROUGH POWER EXCHANGES, APRIL 2013		
Name of the State/UT/Other Regional Entity	Volume of Purchase (MUs)	% of Volume
Gujarat	517.20	20.07%
Maharashtra	330.26	12.82%
Andhra Pradesh	317.95	12.34%
Punjab	282.96	10.98%
Rajasthan	268.59	10.42%
Chattisgarh	183.80	7.13%
Tamilnadu	152.90	5.93%
Uttarakhand	109.46	4.25%
Haryana	107.97	4.19%
Bihar	62.44	2.42%
Uttar Pradesh	52.29	2.03%
Assam	49.13	1.91%
Kerala	40.62	1.58%
MP	26.18	1.02%
J & K	22.68	0.88%
Meghalaya	18.87	0.73%
Jharkhand	9.60	0.37%
Himachal Pradesh	5.26	0.20%
Arunachal Pradesh	4.40	0.17%
Nagaland	4.32	0.17%
West Bengal	4.24	0.16%
Delhi	3.30	0.13%
Orissa	1.16	0.04%
UT Chandigarh	0.74	0.03%
Karnataka	0.22	0.01%
Total	2576.54	100.00%
Volume of purchase by top 5 States	1716.96	66.64%

Table-13: VOLUME OF ELECTRICITY EXPORT THROUGH UI, APRIL 2013

Name of the State/UT/Other Regional Entity	Volume of Export (MUs)	% of Volume
Uttar Pradesh	109.16	8.57%
Rajasthan	108.75	8.54%
MP	100.12	7.86%
Maharashtra	91.78	7.21%
Delhi	81.60	6.41%
Gujarat	78.57	6.17%
Haryana	65.49	5.14%
West Bengal	63.51	4.99%
NHPC Stations	54.22	4.26%
Andhra Pradesh	40.51	3.18%
Bihar	36.80	2.89%
Punjab	35.37	2.78%
Chattisgarh	35.30	2.77%
Jharkhand	35.05	2.75%
Himachal Pradesh	32.95	2.59%
DVC	30.33	2.38%
J & K	29.89	2.35%
Pondicherry	27.54	2.16%
Karnataka	20.79	1.63%
Uttarakhand	18.12	1.42%
Tamilnadu	15.52	1.22%
Orissa	13.69	1.07%
JINDAL POWER	13.61	1.07%
NJPC	13.38	1.05%
Sikkim	12.59	0.99%
Assam	12.09	0.95%
STERLITE	10.37	0.81%
SHREE CEMENT	9.34	0.73%
KARCHAM WANGTOO	9.26	0.73%
Goa	8.53	0.67%
MAITHON POWER LTD	8.32	0.65%
CGPL	6.52	0.51%
LANKO_AMK	6.49	0.51%
NEEPCO Stations	5.10	0.40%
Tripura	4.93	0.39%
Dadra & Nagar Haveli	4.35	0.34%
UT Chandigarh	3.29	0.26%
NSPCL	2.29	0.18%
Meghalaya	2.07	0.16%
ACBIL	2.02	0.16%
Manipur	2.02	0.16%
Arunachal Pradesh	1.95	0.15%
D CPP	1.54	0.12%
RG PPL(Dabhol)	1.53	0.12%
AD HYDRO	1.50	0.12%
BALCO	1.38	0.11%
SIMHAPURI	1.20	0.09%
Daman and Diu	1.06	0.08%
Nagaland	0.80	0.06%
Mizoram	0.39	0.03%
Kerala	0.33	0.03%
LANKO_KONDAPALLY	0.01	0.00%
Total	1273.29	100.00%
Volume of Export by top 5 States	491.41	38.59%

Table-14: VOLUME OF ELECTRICITY IMPORT THROUGH UI, APRIL 2013		
Name of the State/UT/Other Regional Entity	Volume of Import (MUs)	% of Volume
Chattisgarh	157.20	11.84%
Maharashtra	95.13	7.16%
Uttar Pradesh	90.18	6.79%
Haryana	81.39	6.13%
Gujarat	70.86	5.34%
Orissa	67.06	5.05%
Kerala	66.24	4.99%
NHPC Stations	52.32	3.94%
West Bengal	50.19	3.78%
Tamilnadu	44.23	3.33%
STERLITE	39.14	2.95%
Punjab	38.45	2.89%
DVC	38.01	2.86%
Uttarakhand	33.79	2.54%
RGPPL(Dabhol)	28.42	2.14%
Daman and Diu	24.88	1.87%
J & K	23.53	1.77%
Goa	22.12	1.67%
Jharkhand	22.07	1.66%
CGPL	21.99	1.66%
MP	19.84	1.49%
Assam	19.02	1.43%
Himachal Pradesh	16.94	1.28%
Bihar	15.57	1.17%
NJPC	15.56	1.17%
Dadra & Nagar Haveli	14.93	1.12%
Andhra Pradesh	14.85	1.12%
Rajasthan	13.88	1.05%
Karnataka	12.55	0.94%
Meghalaya	10.76	0.81%
Delhi	10.50	0.79%
MAITHON POWER LTD	9.12	0.69%
Arunachal Pradesh	8.96	0.67%
Manipur	8.91	0.67%
Tripura	7.82	0.59%
LANKO_AMK	7.06	0.53%
KARCHAM WANGTOO	7.00	0.53%
ACBIL	6.88	0.52%
UT Chandigarh	6.59	0.50%
Mizoram	6.19	0.47%
JINDAL POWER	5.27	0.40%
Nagaland	5.16	0.39%
NEEPCO Stations	4.65	0.35%
BALCO	2.87	0.22%
DCPP	2.84	0.21%
SHREE CEMENT	2.51	0.19%
SIMHAPURI	2.26	0.17%
Sikkim	0.75	0.06%
NSPCL	0.59	0.04%
LANKO_KONDAPALLY	0.52	0.04%
AD HYDRO	0.51	0.04%
Pondicherry	0.09	0.01%
Total	1328.14	100.00%
Volume of Export by top 5 States	494.75	37.25%

**Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY
(REGIONAL ENTITY-WISE), APRIL 2013**

Sr.No.	Name of the State/UT/Other Regional Entity	Total volume of net short-term transactions of electricity*
1	Tamilnadu	676.46
2	Andhra Pradesh	492.72
3	West Bengal	451.15
4	Maharashtra	414.22
5	Chattisgarh	377.54
6	Kerala	357.45
7	Uttarakhand	278.66
8	Bihar	248.53
9	Punjab	165.51
10	Assam	132.17
11	Gujarat	112.97
12	Jharkhand	87.72
13	Uttar Pradesh	82.98
14	Dadra & Nagar Haveli	81.29
15	Meghalaya	41.05
16	RGPPL(Dabhol)	26.89
17	Daman and Diu	23.81
18	Goa	18.39
19	CGPL	15.47
20	Tripura	13.81
21	Arunachal Pradesh	11.41
22	Nagaland	9.03
23	Manipur	6.89
24	Mizoram	5.79
25	NJPC	2.18
26	BALCO	1.24
27	Meenakshi	0.95
28	LANKO_AMK	0.57
29	LANKO_KONDAPALLY	0.51
30	ADHUNIK POWER LTD	-1.32
31	NSPCL	-1.70
32	NEEPCO Stations	-4.98
33	SIMHAPURI	-6.87
34	Rajasthan	-7.05
35	LANCO BUDHIL	-7.48
36	DCPP	-14.60
37	Sikkim	-23.65
38	AD HYDRO	-27.22
39	Pondicherry	-27.45
40	NHPC Stations	-27.50
41	EMCO	-34.36
42	ACBIL	-35.03
43	J & K	-74.87
44	Himachal Pradesh	-99.68
45	MAITHON POWER LTD	-102.59
46	Haryana	-109.86
47	Orissa	-157.80
48	SHREE CEMENT	-178.07
49	MP	-214.30
50	KARCHAM WANGTOO	-242.23
51	UT Chandigarh	-253.20
52	DVC	-275.82
53	JINDAL POWER	-427.53
54	Delhi	-454.65
55	STERLITE	-604.18
56	Karnataka	-806.75

* 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 2013			
	Details of Congestion	IEX	PXIL
A	Unconstrained Cleared Volume* (MUs)	3037.09	139.50
B	Actual Cleared Volume and hence scheduled (MUs)	2515.68	60.86
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	521.41	78.64
D	Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume	17.17%	56.37%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	100.00%	100.00%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	25.00%	25.00%
	6.00 - 12.00 hours	25.00%	25.00%
	12.00 - 18.00 hours	25.00%	25.00%
	18.00 - 24.00 hours	25.00%	25.00%
<i>* This power would have been scheduled had there been no congestion.</i>			
<i>Source: IEX & PXIL</i>			

Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (MUs), APRIL 2013 (DAY-WISE)						
Date	Bilateral		Power Exchange (Area Clearing Volume# of Day Ahead Market)		Unscheduled Interchange (Over Drawl+Under Generation)	Total Electricity Generation (MU) as given at CEA Website*
	Through Traders and PXs**	Direct	IEX	PXI		
1-Apr-13	73.94	24.47	87.38	1.24	54.64	2543.35
2-Apr-13	82.28	25.09	84.32	1.24	51.81	2548.64
3-Apr-13	80.69	22.23	86.29	1.73	50.64	2531.93
4-Apr-13	81.24	23.76	89.33	1.42	53.60	2556.14
5-Apr-13	85.80	25.71	79.26	1.17	57.39	2546.29
6-Apr-13	87.92	23.69	75.68	1.63	50.79	2540.07
7-Apr-13	86.93	26.92	70.22	1.37	53.50	2510.10
8-Apr-13	88.92	22.98	74.44	1.18	48.19	2590.50
9-Apr-13	88.83	24.39	77.87	1.28	49.31	2625.88
10-Apr-13	93.73	25.44	76.61	1.18	44.96	2583.99
11-Apr-13	91.77	25.33	78.27	1.53	43.70	2582.36
12-Apr-13	92.04	23.86	77.28	1.71	41.24	2579.88
13-Apr-13	86.38	24.37	73.22	1.72	51.45	2601.80
14-Apr-13	84.09	24.10	87.93	1.73	65.33	2529.35
15-Apr-13	94.82	24.37	86.06	1.27	62.83	2578.55
16-Apr-13	95.46	24.83	81.95	1.28	57.29	2588.51
17-Apr-13	92.20	24.43	87.81	2.40	54.35	2608.79
18-Apr-13	93.71	25.48	88.93	2.14	49.38	2602.68
19-Apr-13	94.25	24.98	83.54	2.39	56.59	2594.34
20-Apr-13	94.66	25.12	85.74	1.73	64.14	2552.84
21-Apr-13	95.53	23.62	82.57	2.22	77.12	2464.93
22-Apr-13	89.61	25.32	79.00	1.61	53.78	2537.00
23-Apr-13	95.03	25.89	75.09	1.56	50.59	2536.63
24-Apr-13	95.50	26.85	94.41	2.32	52.51	2626.95
25-Apr-13	91.47	27.30	101.93	3.43	52.41	2643.22
26-Apr-13	88.58	27.92	94.50	3.99	50.52	2622.00
27-Apr-13	95.13	27.78	88.16	4.05	43.92	2637.52
28-Apr-13	90.65	24.67	83.43	4.11	50.41	2635.00
29-Apr-13	91.90	26.98	94.82	3.60	43.90	2712.13
30-Apr-13	93.61	24.25	89.63	2.63	43.99	2745.73
Total	2696.65	752.15	2515.68	60.86	1580.28	77557.10
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 (₹/kWh), APRIL 2013 (DAY-WISE)

Market Segment	Day ahead market of IEX			Day ahead market of PXIL			Under Drawl/Over Drawl from the Grid (UI)						
	Date	Minimum ACP	Maximum ACP	Weighted Average Price*	Minimum ACP	Maximum ACP	Weighted Average Price*	NEW Grid			SR Grid		
								Minimum Price	Maximum Price	Average Price**	Minimum Price	Maximum Price	Average Price**
1-Apr-13	1.80	15.00	3.36	1.57	5.00	2.52	0.17	7.93	3.31	0.00	8.78	5.21	
2-Apr-13	2.00	15.00	3.36	2.00	2.50	2.34	0.00	9.06	3.04	0.00	8.78	4.41	
3-Apr-13	2.05	12.50	3.61	2.00	4.00	2.54	0.00	4.78	2.23	0.50	7.09	4.11	
4-Apr-13	2.00	16.00	3.62	2.00	4.00	2.59	0.00	7.93	2.56	0.17	5.91	4.04	
5-Apr-13	2.00	13.50	3.69	2.05	2.77	2.47	0.00	7.93	2.90	0.00	7.65	4.42	
6-Apr-13	2.00	15.00	3.69	2.05	2.77	2.48	0.17	5.91	2.94	0.50	7.93	4.91	
7-Apr-13	1.96	12.00	3.48	1.57	2.60	2.24	0.00	4.22	1.90	0.33	5.91	4.27	
8-Apr-13	2.00	13.00	3.59	1.56	2.60	2.30	0.33	10.80	2.94	0.50	10.80	4.39	
9-Apr-13	2.00	8.50	3.47	2.00	2.60	2.36	1.16	8.21	3.83	0.50	7.09	4.55	
10-Apr-13	2.00	10.00	3.69	2.05	2.60	2.42	1.16	9.06	3.79	0.99	7.65	5.01	
11-Apr-13	2.26	8.00	3.81	2.00	3.00	2.54	0.17	5.34	2.62	1.49	7.93	4.83	
12-Apr-13	2.39	12.20	4.00	2.00	3.10	2.58	0.33	8.21	2.92	0.33	8.21	4.26	
13-Apr-13	2.60	17.00	4.09	2.40	3.40	2.76	0.00	7.65	2.29	0.50	8.21	4.56	
14-Apr-13	2.30	11.00	4.08	1.96	3.55	2.95	0.00	2.79	1.14	0.00	5.91	3.19	
15-Apr-13	2.42	11.50	4.41	2.30	3.75	3.12	0.00	5.06	1.00	0.00	7.65	3.70	
16-Apr-13	2.30	16.00	4.24	2.30	3.90	3.37	0.00	4.22	1.43	0.00	5.91	4.03	
17-Apr-13	2.30	15.00	4.23	2.43	3.70	3.26	0.00	5.63	1.72	0.00	7.65	4.28	
18-Apr-13	2.39	18.00	3.83	1.95	3.60	3.07	0.00	4.78	2.03	0.66	7.93	4.50	
19-Apr-13	2.30	16.00	4.01	2.39	4.00	2.93	0.00	4.50	1.71	0.00	9.34	4.60	
20-Apr-13	2.43	13.50	3.94	1.95	3.40	2.88	0.00	3.08	1.19	0.00	7.37	3.84	
21-Apr-13	1.95	19.50	3.43	1.31	2.99	2.71	0.00	2.51	0.65	0.00	7.65	3.57	
22-Apr-13	2.30	19.50	3.45	1.96	2.99	2.69	0.17	4.50	1.77	0.17	5.91	3.97	
23-Apr-13	2.25	16.50	3.53	1.56	2.90	2.60	0.83	7.09	2.53	0.83	7.65	4.23	
24-Apr-13	1.31	15.50	3.52	1.31	2.65	2.56	0.66	8.21	3.22	0.66	7.65	4.54	
25-Apr-13	2.30	13.00	3.79	2.48	2.94	2.74	0.00	4.78	2.07	0.00	8.49	4.80	
26-Apr-13	2.49	19.60	3.46	2.06	3.11	2.88	0.00	5.63	1.99	0.00	9.34	4.81	
27-Apr-13	2.34	16.00	3.69	2.50	3.00	2.78	0.17	4.50	2.18	1.65	7.65	4.43	
28-Apr-13	2.06	9.01	3.54	1.44	2.75	2.57	0.00	5.34	1.82	0.00	7.37	3.46	
29-Apr-13	2.07	12.00	3.72	1.31	2.90	2.63	0.00	4.50	2.02	0.00	7.09	3.70	
30-Apr-13	2.35	15.00	3.76	2.07	3.10	2.74	0.00	4.78	2.39	1.16	7.65	4.19	
	1.31#	19.60#	3.74	1.31#	5.00#	2.71	0.00#	10.80#	2.27	0.00#	10.80#	4.29	

Source: Data on price of PX transactions from IEX and PXIL and data on UI 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 UI of 96 time blocks of 15 minutes each in a day. UI price includes Ceiling UI Rate +40% additional UI charge.

Maximum/Minimum in the month

Table-19: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY*-WISE) (MUs), APRIL 2013

Name of the State/UT/Other Regional Entity	Through Bilateral			Through Power Exchange			Through UI with Regional Grid			Total Net***
	Sale	Purchase	Net**	Sale	Purchase	Net**	Export (Under Drawl)	Import (Over Drawl)	Net**	
Punjab	120.53	0.00	-120.53	0.00	282.96	282.96	35.37	38.45	3.08	165.51
Haryana	127.41	49.86	-77.55	156.18	107.97	-48.21	65.49	81.39	15.90	-109.86
Rajasthan	226.15	61.61	-164.55	16.22	268.59	252.37	108.75	13.88	-94.87	-7.05
Delhi	173.28	133.63	-39.64	347.21	3.30	-343.91	81.60	10.50	-71.10	-454.65
Uttar Pradesh	74.38	124.04	49.66	0.00	52.29	52.29	109.16	90.18	-18.98	82.98
Uttarakhand	0.00	153.64	153.64	0.11	109.46	109.35	18.12	33.79	15.67	278.66
Himachal Pradesh	90.11	35.46	-54.65	34.27	5.26	-29.01	32.95	16.94	-16.01	-99.68
J & K	137.67	47.58	-90.10	1.08	22.68	21.60	29.89	23.53	-6.36	-74.87
UT Chandigarh	266.30	12.04	-254.26	2.97	0.74	-2.23	3.29	6.59	3.29	-253.20
MP	6.34	39.03	32.69	192.89	26.18	-166.71	100.12	19.84	-80.28	-214.30
Maharashtra	1.08	106.35	105.27	24.67	330.26	305.60	91.78	95.13	3.35	414.22
Gujarat	158.88	282.82	123.94	520.46	517.20	-3.26	78.57	70.86	-7.71	112.97
Chattisgarh	2.40	80.22	77.82	5.97	183.80	177.83	35.30	157.20	121.90	377.54
Daman and Diu	0.00	0.00	0.00	0.00	0.00	0.00	1.06	24.88	23.81	23.81
Dadra & Nagar Haveli	0.00	70.70	70.70	0.00	0.00	0.00	4.35	14.93	10.59	81.29
Andhra Pradesh	0.00	281.43	281.43	81.00	317.95	236.95	40.51	14.85	-25.66	492.72
Karnataka	382.19	0.00	-382.19	416.54	0.22	-416.32	20.79	12.55	-8.24	-806.75
Kerala	0.00	250.92	250.92	0.00	40.62	40.62	0.33	66.24	65.91	357.45
Tamilnadu	0.00	494.85	494.85	0.00	152.90	152.90	15.52	44.23	28.71	676.46
Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	27.54	0.09	-27.45	-27.45
West Bengal	138.64	705.96	567.32	107.10	4.24	-102.86	63.51	50.19	-13.31	451.15
Orissa	215.66	7.60	-208.05	4.27	1.16	-3.12	13.69	67.06	53.37	-157.80
Bihar	0.00	207.32	207.32	0.00	62.44	62.44	36.80	15.57	-21.23	248.53
Jharkhand	22.10	113.19	91.09	0.00	9.60	9.60	35.05	22.07	-12.97	87.72
Sikkim	0.00	1.90	1.90	13.71	0.00	-13.71	12.59	0.75	-11.84	-23.65
DVC	340.09	72.67	-267.42	16.09	0.00	-16.09	30.33	38.01	7.69	-275.82
Arunachal Pradesh	0.00	0.00	0.00	0.00	4.40	4.40	1.95	8.96	7.01	11.41
Assam	0.00	76.10	76.10	0.00	49.13	49.13	12.09	19.02	6.93	132.17
Manipur	0.00	0.00	0.00	0.00	0.00	0.00	2.02	8.91	6.89	6.89
Meghalaya	3.44	17.04	13.60	0.11	18.87	18.76	2.07	10.76	8.69	41.05
Mizoram	0.00	0.00	0.00	0.00	0.00	0.00	0.39	6.19	5.79	5.79
Nagaland	0.00	0.34	0.34	0.00	4.32	4.32	0.80	5.16	4.36	9.03
Tripura	3.83	14.75	10.92	0.00	0.00	0.00	4.93	7.82	2.89	13.81
Goa	0.00	4.80	4.80	0.00	0.00	0.00	8.53	22.12	13.59	18.39
NHPC Stations	0.00	0.00	0.00	25.60	0.00	-25.60	54.22	52.32	-1.90	-27.50
NJPC	0.00	0.00	0.00	0.00	0.00	0.00	13.38	15.56	2.18	2.18
AD HYDRO	19.95	0.00	-19.95	6.28	0.00	-6.28	1.50	0.51	-0.99	-27.22
KARCHAM WANGTOO	102.50	0.00	-102.50	137.46	0.00	-137.46	9.26	7.00	-2.27	-242.23
SHREE CEMENT	133.99	0.00	-133.99	37.26	0.00	-37.26	9.34	2.51	-6.83	-178.07
LANCO BUDHIL	0.00	0.00	0.00	7.48	0.00	-7.48	0.00	0.00	0.00	-7.48
JINDAL POWER	273.42	0.00	-273.42	145.77	0.00	-145.77	13.61	5.27	-8.34	-427.53
LANCO_AMK	0.00	0.00	0.00	0.00	0.00	0.00	6.49	7.06	0.57	0.57
NSPCL	0.00	0.00	0.00	0.00	0.00	0.00	2.29	0.59	-1.70	-1.70
ACBIL	10.63	0.00	-10.63	29.27	0.00	-29.27	2.02	6.88	4.86	-35.03
BALCO	0.00	0.00	0.00	0.26	0.00	-0.26	1.38	2.87	1.50	1.24
RGPPL(Dabhol)	0.00	0.00	0.00	0.00	0.00	0.00	1.53	28.42	26.89	26.89
CGPL	0.00	0.00	0.00	0.00	0.00	0.00	6.52	21.99	15.47	15.47
DCPP	0.00	0.00	0.00	15.90	0.00	-15.90	1.54	2.84	1.30	-14.60
EMCO	0.00	0.00	0.00	34.36	0.00	-34.36	0.00	0.00	0.00	-34.36
LANCO_KONDAPALLY	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.52	0.51	0.51
SIMHAPURI	0.00	0.00	0.00	7.93	0.00	-7.93	1.20	2.26	1.06	-6.87
Meenakshi	0.00	0.95	0.95	0.00	0.00	0.00	0.00	0.00	0.00	0.95
STERLITE	489.91	0.00	-489.91	143.05	0.00	-143.05	10.37	39.14	28.78	-604.18
MAITHON POWER LTD	64.16	0.00	-64.16	39.23	0.00	-39.23	8.32	9.12	0.80	-102.59
ADHUNIK POWER LTD	0.00	0.00	0.00	1.32	0.00	-1.32	0.00	0.00	0.00	-1.32
NEEPCO Stations	0.00	0.00	0.00	4.53	0.00	-4.53	5.10	4.65	-0.45	-4.98

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 UI

Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs) TRANSACTED THROUGH POWER EXCHANGES, APRIL 2013					
Sr.No	Details of REC Transactions	IEX		PXIL	
		Solar	Non-Solar	Solar	Non Solar
A	Volume of Buy Bid	1994	10670	1528	33789
B	Volume of Sell Bid	1468	1221579	1609	663365
C	Ratio of Buy Bid to Sell Bid Volume	1.36	0.01	0.95	0.05
D	Market Clearing Volume (MWh)	1005	10670	1212	33789
E	Market Clearing Price (₹/MWh)	12206	1500	12000	1500

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

Note 2:

<i>Forbearance and Floor Price w.e.f 1st April 2012</i>		
Type of REC	<i>Floor Price (₹/MWh)</i>	<i>Forbearance Price (₹/MWh)</i>
<i>Solar</i>	<i>9300.00</i>	<i>13400.00</i>
<i>Non-Solar</i>	<i>1500.00</i>	<i>3300.00</i>