

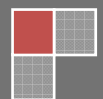


# Monthly Report on Short-term Transactions of Electricity in India

June, 2011



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## **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 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; and (iii) to disclose/disseminate all relevant market information. The analysis of the report for the month of June 2011 is as under:

### **I: Volume of Short-term Transactions of Electricity**

During the Month of June 2011, total electricity generation excluding generation from renewable and captive power plants in India was 70742.38 MUs (Table-1).

Of the total electricity generation, 8032.78 MUs (11.35%) were transacted through short-term, comprising of 4264.33 MUs (6.03%) through Bilateral (through traders and term-ahead contracts on Power Exchanges and directly between distribution companies), followed by 2519.54 MUs (3.56%) through UI and 1248.91 MUs (1.77%) through day ahead collective transactions on Power Exchanges (IEX and PXIL) (Table-1 & Chart-2).

Of the total short-term transactions, Bilateral constitute 53.09% (35.57% through traders and term-ahead contracts on Power Exchanges and 17.52% directly between distribution companies) followed by 31.37% through UI and 15.55% through day ahead collective transactions on Power Exchanges (Table-1& Chart-1). Daily volume of short-term transactions is shown in Chart-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 & Chart-4. The trading licensees are undertaking electricity transactions through bilateral contracts 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 are 40 trading licensees as on 30.6.2011, of which only 16 have engaged in trading during June

2011. Top 5 trading licenses had a share of 86.60% in the total volume traded by all the licensees.

Herfindahl-Hirschman Index (HHI) has been used for measuring the competition among the trading licensees. Increases in the HHI generally indicate a decrease in competition and an increase of market power, whereas decreases indicate the opposite. A HHI above 0.25 indicates high concentration. The HHI computed for volume of electricity traded by trading licensees was 0.2305 for the month of June 2011, which indicates moderate concentration of market power (Table-2).

The volume of electricity transacted through IEX and PXIL in the day ahead market was 1147.44 MUs and 101.47 MUs respectively. The volume of total Buy bids and Sale bids was 1467.76 MUs and 2002.99 MUs respectively in IEX and 175.40 MUs and 308.00 MUs respectively in PXIL. The gap between the volume of buy bids and sale bids placed through power exchanges shows that there was less demand in IEX (0.73 times) and in PXIL (0.57 times) when compared with the supply offered through these exchanges.

The volume of electricity transacted in term-ahead market through weekly contracts of power exchanges was Nil in IEX (Table-6) and 9.60 MU in PXIL (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 ₹3.82/kWh. The weighted average sale price also computed for the transactions during Round the clock (RTC), Peak and Off-Peak periods separately and the sale price was ₹3.81/kWh, ₹4.94/kWh and ₹3.81/kWh respectively. Minimum and Maximum sale price was ₹2.60/kWh and ₹8.04/kWh respectively (Table-3 & 4).

**(ii) Price of electricity transacted Through Power Exchange:** The Minimum, Maximum and Weighted Average Price have been computed for the volume transacted through IEX and PXIL separately. The Minimum, Maximum and Weighted Average Price were ₹1.60/kWh, ₹6.86/kWh and ₹2.80/kWh respectively in IEX and ₹1.50/kWh, ₹6.86/kWh and ₹2.99/kWh respectively in PXIL (Table-5).

The weighted average price of electricity transacted in term-ahead market through the weekly contracts of IEX was ₹3.31/kWh (Table 6) and for PXIL was ₹3.30/kWh (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 ₹2.96/kWh in the NEW Grid and ₹3.29/kWh in the SR Grid. Minimum and Maximum price of UI was ₹0.00/kWh and ₹17.46/kWh respectively in the New Grid and ₹0.00/kWh and ₹12.22/kWh respectively in the SR Grid (Table-8).

The price of electricity transacted through trading licensees, power exchanges and UI and its comparison is shown in Chart-5 & 6.

### **III: Volume of Short-term Transactions of Electricity (Regional Entity<sup>1</sup>-Wise)**

Of the total bilateral transactions, top 5 regional entities selling 53% of the volume are Himachal Pradesh, Jindal Power Ltd, Chhattisgarh, Jammu & Kashmir and Sterlite. Top 5 regional entities purchasing 70% of the volume are Punjab, Uttar Pradesh, Maharashtra, Delhi and Haryana (Table-9 & 10).

Of the total Power Exchange transactions, top 5 regional entities selling 59% of the volume are Gujarat, Himachal Pradesh, Delhi, Maharashtra and Karnataka. Top 5 regional entities purchasing 72% of the volume are Punjab, Uttar Pradesh, Tamil Nadu, Rajasthan, and Gujarat (Table-11 & 12).

Of the total UI transactions, top 5 regional entities underdrawing 46% of the volume are Maharashtra, Delhi, Punjab, Madhya Pradesh and Orissa. Top 5 regional entities overdrawing 45% of the volume are Uttar Pradesh, Rajasthan, DVC, Gujarat and West Bengal (Table-13 & 14).

Regional entity-wise total volume of net short-term transactions of electricity i.e. volume of net transactions through bilateral, power exchange and UI is shown in Table-15. Top 5 regional entities selling electricity are Himachal Pradesh, Jindal Power Ltd, Jammu & Kashmir, Lanco Amarkantak Ltd and Sterlite and top 5 regional entities purchasing electricity are Punjab, Uttar Pradesh, Tamil Nadu, Haryana and Rajasthan.

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<sup>1</sup> 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: Congestion<sup>2</sup> 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”<sup>3</sup>.

In the month of June 2011, 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 of 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 due to congestion was about 2% and 8% of the actual cleared volume in IEX and PXIL, respectively. Although the congestion occurred in power exchanges, in percentage of time terms it was around 18% in IEX and 21% in PXIL.

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

<sup>3</sup> “ 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: Inferences:**

- The percentage of short-term transactions of electricity to total electricity generation was 11.35%.
- Of the total short-term transactions of electricity, 53.09% transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies) followed by 31.37% through UI and 15.55% through Power Exchanges.
- Top 5 trading licenses are having share of 86.60% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for volume of electricity traded by trading licensees was 0.2305 indicates moderate concentration of market power.
- The price of electricity transacted through Trading Licensees (₹3.82/kWh) was relatively high when compared with the price of electricity transacted through Power Exchanges (₹2.80/kWh in IEX and ₹2.99/kWh in PXIL). The price of electricity transacted through UI was ₹2.96/kWh in the NEW Grid and ₹3.29/kWh in the SR Grid.
- The gap between the volume of sale bids and buy bids placed through power exchanges shows that there was less demand in IEX (1:0.73) and in PXIL (1:0.57) when compared with the supply offered through these exchanges.
- Top 5 regional entities selling electricity are Himachal Pradesh, Jindal Power Ltd, Jammu & Kashmir, Lanco Amarkantak Ltd and Sterlite and top 5 regional entities purchasing electricity are Punjab, Uttar Pradesh, Tamil Nadu, Haryana and Rajasthan.
- The volume of electricity that could not be cleared due to congestion was about 2% and 8% of the actual cleared volume in IEX and PXIL, respectively. In percentage of time terms, congestion occurred 18% of the time (127 hrs in the month) in IEX and 21% of the time (153 hrs in the month) in PXIL.



<b>Format-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (MUs)</b>						<b>Total Electricity Generation (MUs) as given at CEA Website*</b>
<b>Month: June 2011</b>						
<b>Date</b>	<b>Bilateral</b>		<b>Power Exchange (Area Clearing Volume# of day ahead market)</b>		<b>Unscheduled Interchange (Over Drawl+Under Generation)</b>	
	<b>Through Traders and PXs**</b>	<b>Direct</b>	<b>IEX</b>	<b>PXI</b>		
1-Jun-11	75.38	44.56	36.14	2.53	104.02	2339.32
2-Jun-11	80.22	47.84	36.54	2.88	96.44	2324.23
3-Jun-11	78.93	48.27	39.35	4.12	86.75	2331.75
4-Jun-11	73.48	48.18	40.57	4.60	79.39	2353.99
5-Jun-11	78.12	43.16	37.36	4.32	74.14	2317.77
6-Jun-11	71.18	45.68	41.80	4.54	101.97	2396.81
7-Jun-11	76.06	34.45	44.01	5.65	78.02	2424.17
8-Jun-11	75.92	34.45	32.93	3.98	95.07	2394.75
9-Jun-11	73.17	34.45	37.44	3.65	88.43	2407.46
10-Jun-11	89.32	35.01	30.77	1.45	98.37	2381.61
11-Jun-11	91.00	36.24	33.09	2.03	89.37	2415.91
12-Jun-11	96.13	35.89	34.12	2.18	96.50	2351.77
13-Jun-11	88.93	35.83	37.75	3.16	73.14	2422.78
14-Jun-11	87.40	37.03	42.12	3.33	74.53	2430.23
15-Jun-11	91.99	39.43	41.89	3.83	84.23	2332.50
16-Jun-11	99.77	39.75	33.70	2.99	85.83	2304.01
17-Jun-11	100.04	40.09	36.11	3.54	79.12	2305.27
18-Jun-11	101.97	38.11	34.81	1.84	86.16	2281.09
19-Jun-11	103.20	43.47	33.36	2.34	85.71	2275.12
20-Jun-11	101.40	47.48	40.31	4.08	74.74	2355.50
21-Jun-11	104.84	59.25	37.07	2.93	72.72	2355.94
22-Jun-11	106.47	59.41	36.90	3.41	80.80	2391.72
23-Jun-11	104.32	56.55	34.61	3.22	85.94	2391.72
24-Jun-11	107.23	59.86	42.06	5.37	77.58	2442.17
25-Jun-11	115.35	61.58	43.16	5.21	76.79	2426.14
26-Jun-11	116.16	59.10	50.10	4.67	83.73	2254.14
27-Jun-11	114.26	61.62	45.65	3.85	72.47	2304.10
28-Jun-11	118.91	59.70	37.91	2.16	76.43	2309.11
29-Jun-11	118.62	59.73	38.39	1.96	82.45	2321.93
30-Jun-11	117.28	61.11	37.44	1.65	78.72	2399.37
<b>Total</b>	<b>2857.06</b>	<b>1407.27</b>	<b>1147.44</b>	<b>101.47</b>	<b>2519.54</b>	<b>70742.38</b>

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.

Format-2: PRICE OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (₹/KWh)												
Month: June 2011												
Market Segment	Day ahead market of IEX			Day ahead market of PXIL			Under Draw/Over Draw from the Grid (UI)					
Date	Minimum ACP	Maximum ACP	Weighted Average*	Minimum ACP	Maximum ACP	Weighted Average*	NEW Grid			SR Grid		
							Minimum Price	Maximum Price	Average Price**	Minimum Price	Maximum Price	Average Price**
1-Jun-11	1.85	3.50	2.60	2.00	4.05	2.48	0.00	3.88	1.82	0.47	12.22	3.98
2-Jun-11	1.78	3.35	2.33	2.00	3.35	2.39	0.00	12.22	2.54	0.93	12.22	3.13
3-Jun-11	1.60	2.89	2.26	1.98	2.75	2.44	0.00	7.79	2.80	0.47	7.32	2.78
4-Jun-11	1.60	2.70	2.23	1.98	2.90	2.47	0.47	12.22	3.23	0.00	6.85	3.19
5-Jun-11	1.75	2.50	2.16	1.89	2.54	2.27	0.00	12.22	2.84	0.00	6.85	2.42
6-Jun-11	1.85	3.40	2.46	2.00	2.60	2.28	0.62	17.46	5.64	0.16	7.79	3.66
7-Jun-11	2.00	3.25	2.55	1.99	3.00	2.51	1.55	12.22	5.19	0.62	6.85	2.88
8-Jun-11	2.38	3.80	3.15	2.48	3.50	3.05	0.47	8.26	2.79	0.16	7.79	2.90
9-Jun-11	2.25	4.00	3.08	2.25	3.50	3.04	0.31	6.38	2.31	0.16	12.22	3.50
10-Jun-11	2.20	4.10	3.00	2.20	4.21	3.13	0.00	12.22	2.24	0.62	12.22	3.16
11-Jun-11	2.00	4.00	2.85	2.30	3.80	2.93	0.62	12.22	2.95	0.62	12.22	3.36
12-Jun-11	1.90	3.50	2.56	2.10	3.49	2.35	0.31	12.22	2.71	0.00	6.85	2.22
13-Jun-11	2.00	4.00	2.92	2.20	4.00	3.11	1.24	12.22	4.95	0.31	5.44	2.77
14-Jun-11	2.09	4.05	3.05	2.50	4.05	3.30	0.16	12.22	3.47	0.00	6.85	2.55
15-Jun-11	2.12	4.25	3.19	2.29	4.10	3.26	0.00	4.50	1.45	0.00	3.88	1.95
16-Jun-11	1.99	3.50	2.71	2.24	4.10	3.25	0.00	7.32	1.81	0.00	4.50	2.18
17-Jun-11	1.88	3.40	2.43	2.00	3.50	3.12	0.00	5.44	1.76	0.62	7.79	2.57
18-Jun-11	1.75	3.50	2.41	1.89	3.30	2.48	0.00	6.38	1.66	0.31	5.44	2.49
19-Jun-11	1.75	2.99	2.05	1.70	2.99	2.23	0.00	3.88	1.46	0.00	4.50	2.56
20-Jun-11	1.74	3.15	2.32	1.89	3.15	2.63	0.78	12.22	2.69	0.62	12.22	3.50
21-Jun-11	1.75	3.30	2.47	1.50	3.25	2.53	1.24	17.46	5.33	1.24	8.26	3.94
22-Jun-11	1.99	3.71	2.75	2.00	3.70	2.78	2.17	17.46	5.58	2.02	12.22	5.46
23-Jun-11	2.82	4.25	3.49	3.00	4.70	3.78	1.55	12.22	4.89	2.02	12.22	6.67
24-Jun-11	3.00	4.70	3.82	2.89	4.70	3.80	0.93	12.22	3.96	0.93	12.22	5.83
25-Jun-11	2.68	5.00	3.91	2.80	5.51	4.35	0.47	12.22	2.61	0.16	7.32	3.47
26-Jun-11	2.30	5.00	3.44	2.60	5.61	3.64	0.00	3.72	1.30	0.00	5.44	2.09
27-Jun-11	2.20	5.46	3.26	2.40	5.81	3.76	0.00	6.85	2.23	0.00	7.32	2.36
28-Jun-11	2.00	6.00	2.95	1.50	6.01	3.14	0.00	4.03	1.89	0.00	12.22	2.59
29-Jun-11	1.90	6.41	2.60	1.50	6.41	2.82	0.00	4.50	1.75	1.40	12.22	4.00
30-Jun-11	1.80	6.86	2.46	1.50	6.86	3.09	0.62	12.22	2.82	1.24	7.32	4.58
	1.60#	6.86#	2.80	1.50#	6.86#	2.99	0.00#	17.46#	2.96	0.00#	12.22#	3.29

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

Format-3: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY*-WISE) (MUs)										
Month: June 2011										
Name of the State/UT/Other Regional Entity	Through Bilateral			Through Power Exchange			Through UI with Regional Grid			Total Net***
	Sale	Pur- chase	Net**	Sale	Pur- chase	Net**	Export (Under Drawl)	Import (Over Drawl)	Net**	
Punjab	2.88	770.41	767.53	19.98	422.16	402.18	195.75	84.97	-110.78	1058.93
Haryana	82.78	427.30	344.53	47.26	55.10	7.84	75.50	138.33	62.83	415.20
Rajasthan	139.54	206.18	66.65	24.07	116.51	92.44	87.43	203.91	116.48	275.57
Delhi	11.06	500.42	489.36	165.72	1.52	-164.20	203.51	16.70	-186.81	138.35
Uttar Pradesh	102.96	706.88	603.92	0.00	136.25	136.25	63.85	338.68	274.83	1015.00
Uttarakhand	95.57	28.80	-66.77	2.82	1.76	-1.07	27.52	48.03	20.51	-47.33
Himachal Pradesh	719.75	26.31	-693.44	179.51	0.00	-179.51	64.79	18.10	-46.68	-919.64
J & K	343.33	4.56	-338.77	8.64	0.00	-8.64	100.10	12.49	-87.61	-435.02
UT Chandigarh	0.00	36.60	36.60	13.63	0.00	-13.63	12.92	3.18	-9.73	13.23
MP	159.62	51.96	-107.66	46.35	20.71	-25.64	164.48	118.92	-45.56	-178.85
Maharashtra	166.89	560.47	393.58	75.98	14.75	-61.23	260.25	74.61	-185.64	146.71
Gujarat	236.74	41.75	-194.99	198.32	91.57	-106.75	91.03	147.38	56.35	-245.39
Chhattisgarh	374.80	154.56	-220.24	47.32	0.00	-47.32	31.01	85.62	54.61	-212.95
Daman and Diu	0.00	2.42	2.42	0.00	0.00	0.00	2.57	17.81	15.24	17.66
Dadra & Nagar Haveli	0.00	8.70	8.70	0.00	2.34	2.34	0.99	52.74	51.74	62.78
Andhra Pradesh	29.40	95.71	66.31	50.07	79.50	29.42	91.25	73.63	-17.62	78.12
Karnataka	33.87	31.67	-2.20	58.20	28.71	-29.49	33.43	37.13	3.70	-28.00
Kerala	57.37	3.58	-53.79	0.00	18.99	18.99	2.31	72.35	70.04	35.24
Tamilnadu	105.92	424.48	318.57	0.00	131.43	131.43	36.44	140.09	103.65	553.64
Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	44.57	0.21	-44.36	-44.36
West Bengal	135.63	71.71	-63.92	19.16	83.67	64.51	29.40	147.29	117.90	118.48
Orissa	3.46	0.99	-2.46	27.82	0.00	-27.82	112.48	22.93	-89.55	-119.83
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	55.50	15.96	-39.54	-39.54
Jharkhand	0.00	72.00	72.00	0.00	0.00	0.00	53.38	11.77	-41.61	30.39
Sikkim	21.14	4.37	-16.76	34.41	0.00	-34.41	6.07	2.55	-3.52	-54.69
DVC	101.68	0.00	-101.68	0.00	17.21	17.21	2.93	183.31	180.38	95.91
Arunachal Pradesh	0.08	0.00	-0.08	0.65	3.36	2.71	8.60	3.22	-5.38	-2.75
Assam	0.00	0.00	0.00	4.89	21.51	16.62	11.42	38.57	27.15	43.77
Manipur	0.00	0.00	0.00	0.00	0.00	0.00	8.38	2.01	-6.36	-6.36
Meghalaya	5.40	4.87	-0.53	0.76	0.00	-0.76	7.75	6.09	-1.66	-2.96
Mizoram	0.00	0.00	0.00	2.58	0.00	-2.58	3.11	1.86	-1.25	-3.84
Nagaland	0.00	0.00	0.00	0.00	0.00	0.00	6.08	1.69	-4.39	-4.39
Tripura	0.00	0.00	0.00	11.98	0.15	-11.83	6.75	2.30	-4.45	-16.28
GOA	24.46	27.63	3.17	12.48	1.72	-10.75	29.94	7.33	-22.61	-30.19
JINDAL POWER	462.42	0.00	-462.42	41.13	0.00	-41.13	1.09	17.05	15.96	-487.59
LANKO_AMK	210.14	0.00	-209.28	46.44	0.00	-46.44	56.37	19.32	-37.05	-292.77
LANKO_KONDAPALLY	176.30	0.00	-176.30	1.58	0.00	-20.43	3.58	7.22	3.63	-193.09
STERLITE	285.97	0.00	-285.97	15.26	0.00	-15.26	62.63	72.39	9.76	-291.47

Source: NLDC

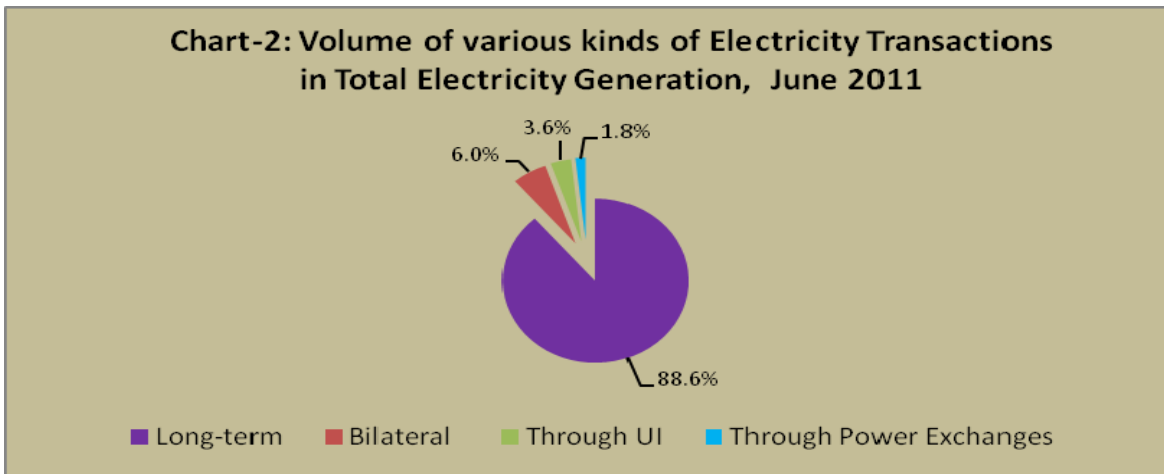
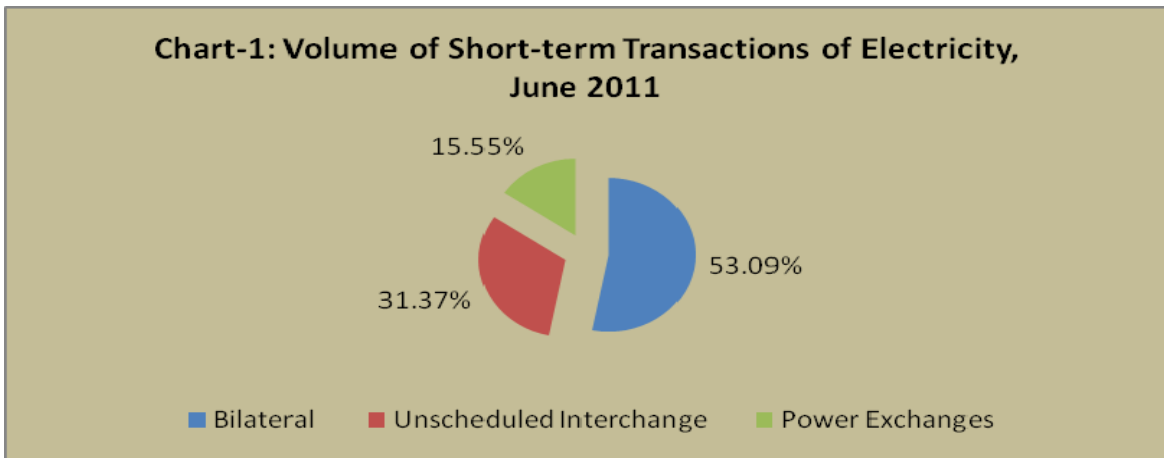
\* in case of a state, the entities which are "selling" also include generators connected to state grid and the entities which are "buying" also include open access consumers.

\*\* (-) indicates sale and (+) indicates purchase

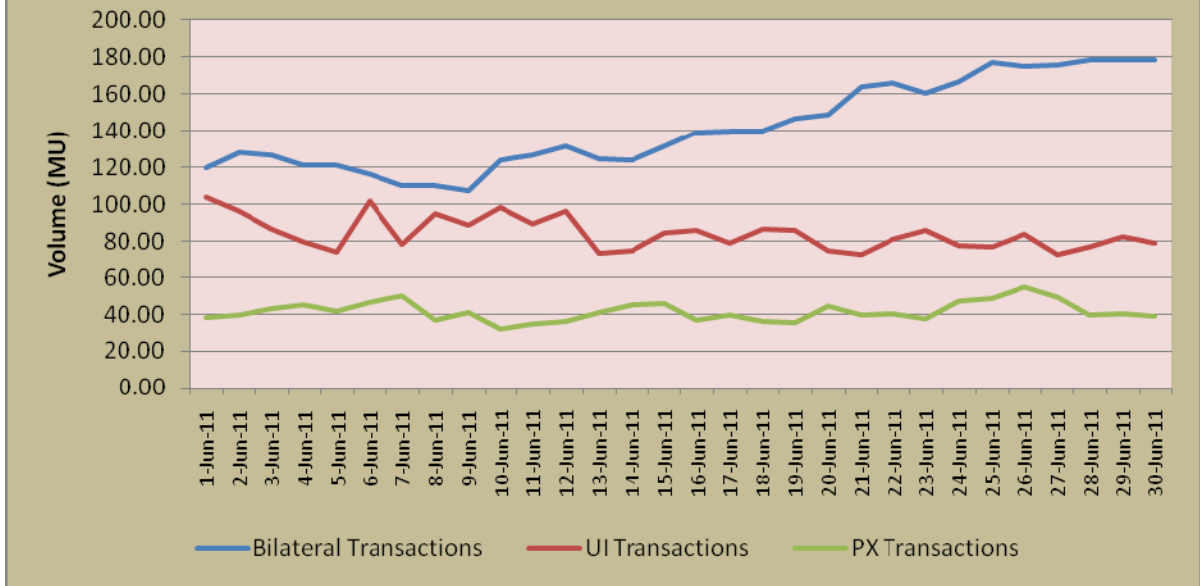
\*\*\* Total net includes net of transactions through bilateral, power exchange and UI

Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA, JUNE 2011				
Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	4264.33	53.09%	6.03%
	(i) Through Traders and PXs	2857.06	35.57%	4.04%
	(ii) Direct	1407.27	17.52%	1.99%
2	Through Power Exchanges	1248.91	15.55%	1.77%
	IEX	1147.44	14.28%	1.62%
	PXIL	101.47	1.26%	0.14%
3	Through UI	2519.54	31.37%	3.56%
	<b>Total</b>	<b>8032.78</b>	100.00%	11.35%
	<b>Total Generation</b>	<b>70742.38</b>	–	–

Source: NLDC



**Chart-3: Volume of Short-term Transactions of Electricity, June 2011  
(Day-wise)**



<b>Table-2: Percentage Share of Electricity Transacted by Trading Licensees, June 2011</b>			
<b>Sr.No</b>	<b>Name of the Trading Licensee</b>	<b>% Share in total Volume traded by Licensees</b>	<b>Herfindahl-Hirschman Index</b>
1	PTC India Ltd	41.24%	0.1700
2	NTPC Vidyut Vyapar Nigam Ltd	17.09%	0.0292
3	National Energy Trading & Services Ltd	12.17%	0.0148
4	Tata Power Trading Company (P) Ltd	9.60%	0.0092
5	Reliance Energy Trading (P) Ltd	6.51%	0.0042
6	Instinct Infra & Power Ltd	3.65%	0.0013
7	GMR Energy Trading Ltd	2.65%	0.0007
8	Knowledge Infrastructure Systems (P) Ltd	2.17%	0.0005
9	JSW Power Trading Company Ltd	1.52%	0.0002
10	Shree Cement Ltd.	1.11%	0.0001
11	Jaiprakash Associates Limited	0.89%	0.0001
12	Mittal Processor (P) Ltd.	0.75%	0.0001
13	RPG Power Trading Company Ltd.	0.31%	0.0000
14	Global Energy (P) Ltd.	0.29%	0.0000
15	Jindal Power Trading Company Ltd.	0.04%	0.0000
16	Essar Electric Power Development Corp. Ltd.	0.02%	0.0000
	<b>Total</b>	<b>100.00%</b>	<b>0.2305</b>
	<b>Top 5 trading licensees</b>	<b>86.60%</b>	
<i>Note: Volume of electricity traded by the licensees includes bilateral transactions (inter-state) and the transactions undertaken through power exchanges.</i>			
<i>Source: Information submitted by trading licensees</i>			

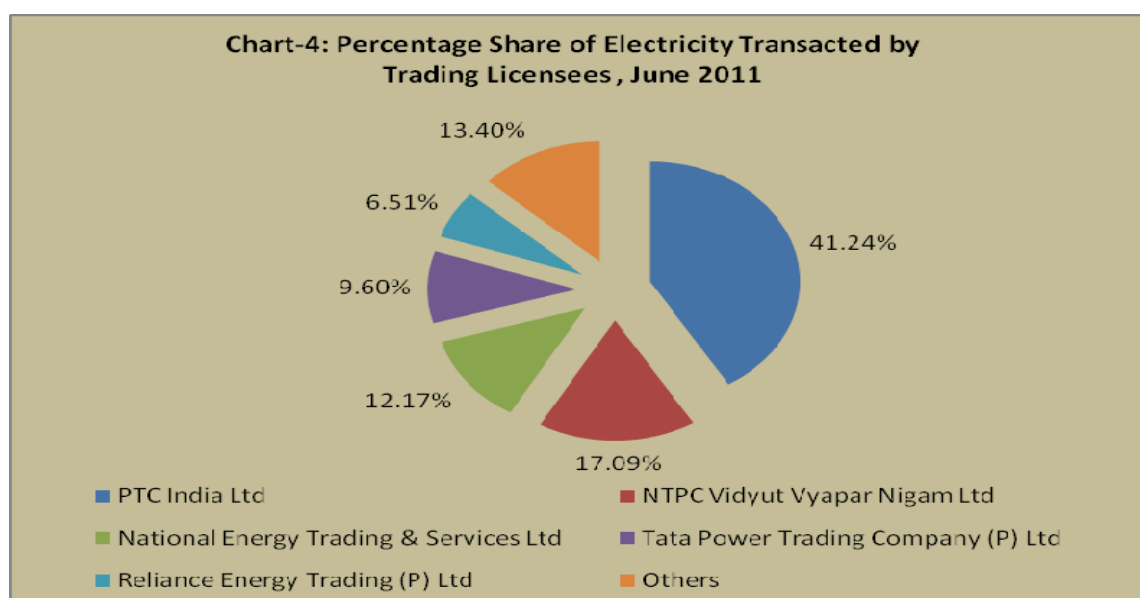


Table-3: Price of Electricity Transacted through Traders (Time-wise)		
Sr.No	Period of Trade	Weighted Average Sale Price (₹/kWh)
1	RTC	3.81
2	PEAK	4.94
3	OFF PEAK	3.81

Source: Information submitted by trading licensees

Table-4: Price of Electricity Transacted through Traders		
Sr.No		Sale Price (₹/kWh)
1	Minimum	2.60
2	Maximum	8.04
3	Weighted Average	3.82

Source: Information submitted by trading licensees

Table-5: Price of Electricity Transacted through Power Exchanges (₹/KWh)			
Sr.No	ACP	IEX	PXIL
1	Minimum	1.60	1.50
2	Maximum	6.86	6.86
3	Weighted Average	2.80	2.99

Source: Information submitted by IEX and PXIL

Table-6: Volume and Price of Electricity in Term Ahead Market of IEX			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kwh)
1	Intra Day Contracts	0.68	3.31
	<b>Total</b>	<b>0.68</b>	

Source: IEX

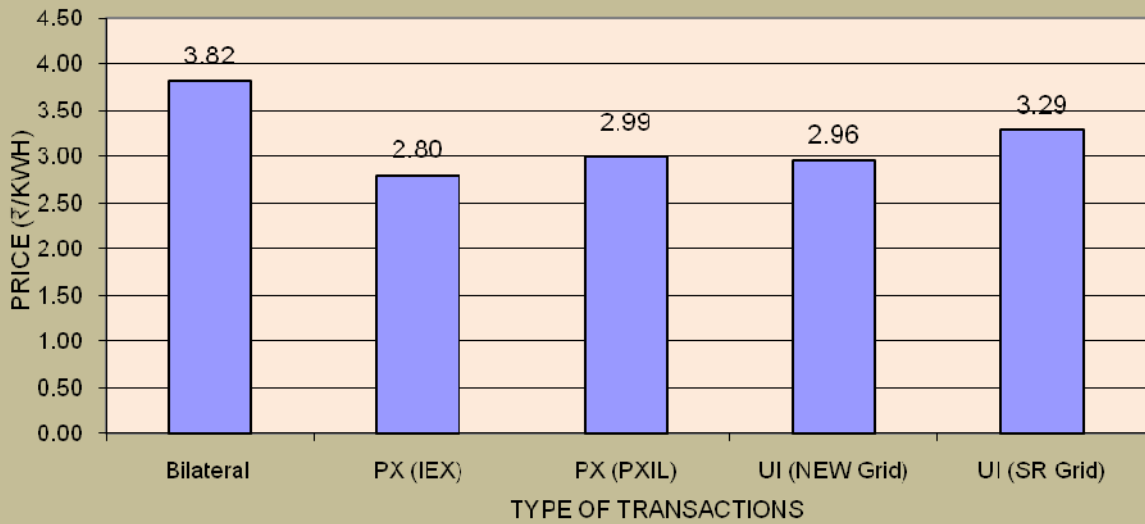
Table-7: Volume and Price of Electricity in Term Ahead Market of PXIL			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kwh)
1	Weekly Contracts	9.60	3.30
	<b>Total</b>	<b>9.60</b>	

Source: PXIL

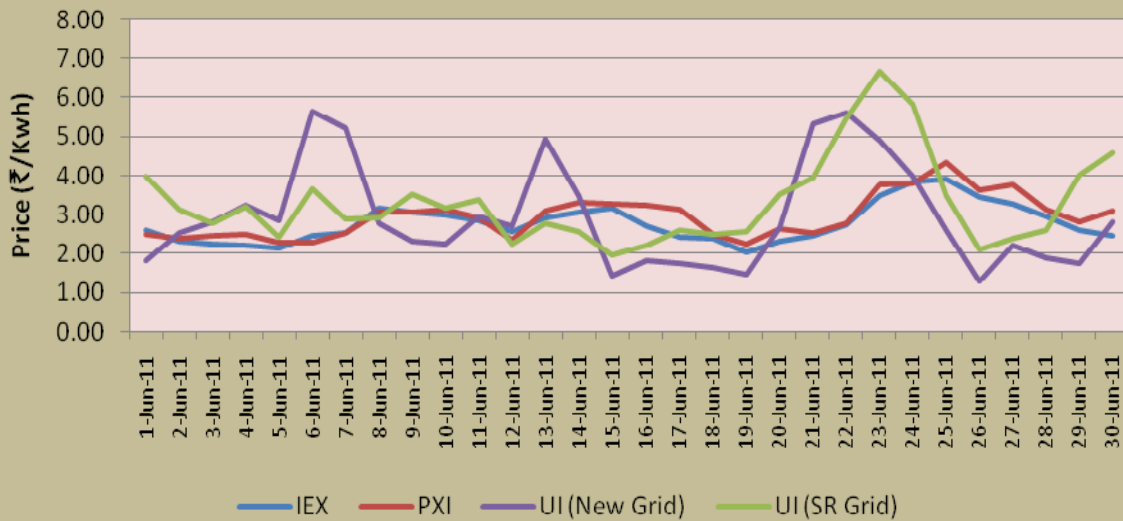
Table-8: Price of Electricity Transacted through UI (₹/KWh)			
Sr.No		NEW Grid	SR Grid
1	Minimum	0.00	0.00
2	Maximum	17.46	12.22
3	Average	2.96	3.29

Source: NLDC

**Chart-5: Price of Short-term Transactions of Electricity, June 2011**



**Chart-6: Price of Short-term Transactions of Electricity, June 2011 (Day-wise)**





<b>Table-9: VOLUME OF ELECTRICITY SALE THROUGH BILATERAL</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Sale (MUs)</b>	<b>% of Volume</b>
Himachal Pradesh	719.75	17.60%
JINDAL POWER	462.42	11.31%
Chhattisgarh	374.80	9.17%
J & K	343.33	8.40%
STERLITE	285.97	6.99%
Gujarat	236.74	5.79%
LANKO_AMK	210.14	5.14%
LANKO_KONDAPALLY	176.30	4.31%
Maharashtra	166.89	4.08%
MP	159.62	3.90%
Rajasthan	139.54	3.41%
West Bengal	135.63	3.32%
Tamilnadu	105.92	2.59%
Uttar Pradesh	102.96	2.52%
DVC	101.68	2.49%
Uttarakhand	95.57	2.34%
Haryana	82.78	2.02%
Kerala	57.37	1.40%
Karnataka	33.87	0.83%
Andhra Pradesh	29.40	0.72%
GOA	24.46	0.60%
Sikkim	21.14	0.52%
Delhi	11.06	0.27%
Meghalaya	5.40	0.13%
Orissa	3.46	0.08%
Punjab	2.88	0.07%
Arunachal Pradesh	0.08	0.00%
<b>Total</b>	<b>4089.15</b>	<b>100.00%</b>
<b>Volume of sale by top 5 States</b>	<b>2186.28</b>	<b>53.47%</b>

<b>Table-10: VOLUME OF ELECTRICITY PURCHASE THROUGH BILATERAL</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
Punjab	770.41	18.07%
Uttar Pradesh	706.88	16.58%
Maharashtra	560.47	13.14%
Delhi	500.42	11.73%
Haryana	427.30	10.02%
Tamilnadu	424.48	9.95%
Rajasthan	206.18	4.84%
Chhattisgarh	154.56	3.62%
Andhra Pradesh	95.71	2.24%
Jharkhand	72.00	1.69%
West Bengal	71.71	1.68%
MP	51.96	1.22%
Gujarat	41.75	0.98%
UT Chandigarh	36.60	0.86%
Karnataka	31.67	0.74%
Uttarakhand	28.80	0.68%
GOA	27.63	0.65%
Himachal Pradesh	26.31	0.62%
Dadra & Nagar Haveli	8.70	0.20%
Meghalaya	4.87	0.11%
J & K	4.56	0.11%
Sikkim	4.37	0.10%
Kerala	3.58	0.08%
Daman and Diu	2.42	0.06%
Orissa	0.99	0.02%
<b>Total</b>	<b>4264.33</b>	<b>100.00%</b>
<b>Volume of purchase by top 5 States</b>	<b>2965.48</b>	<b>69.54%</b>

<b>Table-11: VOLUME OF ELECTRICITY SALE THROUGH POWER EXCHANGES</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Sale (MUs)</b>	<b>% of Volume</b>
Gujarat	198.32	17.14%
Himachal Pradesh	179.51	15.52%
Delhi	165.72	14.32%
Maharashtra	75.98	6.57%
Karnataka	58.20	5.03%
Andhra Pradesh	50.07	4.33%
Chhattisgarh	47.32	4.09%
Haryana	47.26	4.08%
LANKO_AMK	46.44	4.01%
MP	46.35	4.01%
JINDAL POWER	41.13	3.55%
Sikkim	34.41	2.97%
Orissa	27.82	2.40%
Rajasthan	24.07	2.08%
Punjab	19.98	1.73%
West Bengal	19.16	1.66%
STERLITE	15.26	1.32%
UT Chandigarh	13.63	1.18%
GOA	12.48	1.08%
Tripura	11.98	1.04%
J & K	8.64	0.75%
Assam	4.89	0.42%
Uttarakhand	2.82	0.24%
Mizoram	2.58	0.22%
LANKO_KONDAPALLY	1.58	0.14%
Meghalaya	0.76	0.07%
Arunachal Pradesh	0.65	0.06%
<b>Total</b>	<b>1157.01</b>	<b>100.00%</b>
<b>Volume of purchase by top 5 States</b>	<b>677.74</b>	<b>58.58%</b>

<b>Table-12: VOLUME OF ELECTRICITY PURCHASE THROUGH POWER EXCHANGES</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
Punjab	422.16	33.80%
Uttar Pradesh	136.25	10.91%
Tamilnadu	131.43	10.52%
Rajasthan	116.51	9.33%
Gujarat	91.57	7.33%
West Bengal	83.67	6.70%
Andhra Pradesh	79.50	6.37%
Haryana	55.10	4.41%
Karnataka	28.71	2.30%
Assam	21.51	1.72%
MP	20.71	1.66%
Kerala	18.99	1.52%
DVC	17.21	1.38%
Maharashtra	14.75	1.18%
Arunachal Pradesh	3.36	0.27%
Dadra & Nagar Haveli	2.34	0.19%
Uttarakhand	1.76	0.14%
GOA	1.72	0.14%
Delhi	1.52	0.12%
Tripura	0.15	0.01%
<b>Total</b>	<b>1248.91</b>	<b>100.00%</b>
<b>Volume of sale by top 5 States</b>	<b>897.91</b>	<b>71.90%</b>

**Table-13: VOLUME OF ELECTRICITY EXPORT THROUGH UI**

<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Export (MUs)</b>	<b>% of Volume</b>
Maharashtra	260.25	12.66%
Delhi	203.51	9.90%
Punjab	195.75	9.52%
MP	164.48	8.00%
Orissa	112.48	5.47%
J & K	100.10	4.87%
Andhra Pradesh	91.25	4.44%
Gujarat	91.03	4.43%
Rajasthan	87.43	4.25%
Haryana	75.50	3.67%
Himachal Pradesh	64.79	3.15%
Uttar Pradesh	63.85	3.11%
STERLITE	62.63	3.05%
LANKO_AMK	56.37	2.74%
Bihar	55.50	2.70%
Jharkhand	53.38	2.60%
Pondicherry	44.57	2.17%
Tamilnadu	36.44	1.77%
Karnataka	33.43	1.63%
Chhattisgarh	31.01	1.51%
GOA	29.94	1.46%
West Bengal	29.40	1.43%
Uttarakhand	27.52	1.34%
UT Chandigarh	12.92	0.63%
Assam	11.42	0.56%
Arunachal Pradesh	8.60	0.42%
Manipur	8.38	0.41%
Meghalaya	7.75	0.38%
Tripura	6.75	0.33%
Nagaland	6.08	0.30%
Sikkim	6.07	0.30%
LANKO_KONDAPALLY	3.58	0.17%
Mizoram	3.11	0.15%
DVC	2.93	0.14%
Daman and Diu	2.57	0.13%
Kerala	2.31	0.11%
JINDAL POWER	1.09	0.05%
Dadra & Nagar Haveli	0.99	0.05%
<b>Total</b>	<b>2055.14</b>	<b>100.00%</b>
<b>Volume of Export by top 5 States</b>	<b>936.47</b>	<b>45.57%</b>

<b>Table-14: VOLUME OF ELECTRICITY IMPORT THROUGH UI</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Import (MUs)</b>	<b>% of Volume</b>
Uttar Pradesh	338.68	15.07%
Rajasthan	203.91	9.07%
DVC	183.31	8.16%
Gujarat	147.38	6.56%
West Bengal	147.29	6.55%
Tamilnadu	140.09	6.23%
Haryana	138.33	6.15%
MP	118.92	5.29%
Chhattisgarh	85.62	3.81%
Punjab	84.97	3.78%
Maharashtra	74.61	3.32%
Andhra Pradesh	73.63	3.28%
STERLITE	72.39	3.22%
Kerala	72.35	3.22%
Dadra & Nagar Haveli	52.74	2.35%
Uttarakhand	48.03	2.14%
Assam	38.57	1.72%
Karnataka	37.13	1.65%
Orissa	22.93	1.02%
LANKO_AMK	19.32	0.86%
Himachal Pradesh	18.10	0.81%
Daman and Diu	17.81	0.79%
JINDAL POWER	17.05	0.76%
Delhi	16.70	0.74%
Bihar	15.96	0.71%
J & K	12.49	0.56%
Jharkhand	11.77	0.52%
GOA	7.33	0.33%
LANKO_KONDAPALLY	7.22	0.32%
Meghalaya	6.09	0.27%
Arunachal Pradesh	3.22	0.14%
UT Chandigarh	3.18	0.14%
Sikkim	2.55	0.11%
Tripura	2.30	0.10%
Manipur	2.01	0.09%
Mizoram	1.86	0.08%
Nagaland	1.69	0.08%
Pondicherry	0.21	0.01%
<b>Total</b>	<b>2247.75</b>	<b>100.00%</b>
<b>Volume of Export by top 5 States</b>	<b>1020.57</b>	<b>45.40%</b>

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

<b>Sr.No</b>	<b>Name of the State/UT/Other Regional Entity</b>	<b>Total volume of net short-term transactions of electricity*</b>
1	Punjab	1058.93
2	Uttar Pradesh	1015.00
3	Tamilnadu	553.64
4	Haryana	415.20
5	Rajasthan	275.57
6	Maharashtra	146.71
7	Delhi	138.35
8	West Bengal	118.48
9	DVC	95.91
10	Andhra Pradesh	78.12
11	Dadra & Nagar Haveli	62.78
12	Assam	43.77
13	Kerala	35.24
14	Jharkhand	30.39
15	Daman and Diu	17.66
16	UT Chandigarh	13.23
17	Arunachal Pradesh	-2.75
18	Meghalaya	-2.96
19	Mizoram	-3.84
20	Nagaland	-4.39
21	Manipur	-6.36
22	Tripura	-16.28
23	Karnataka	-28.00
24	GOA	-30.19
25	Bihar	-39.54
26	Pondicherry	-44.36
27	Uttarakhand	-47.33
28	Sikkim	-54.69
29	Orissa	-119.83
30	MP	-178.85
31	LANKO_KONDAPALLY	-193.09
32	Chhattisgarh	-212.95
33	Gujarat	-245.39
34	STERLITE	-291.47
35	LANKO_AMK	-292.77
36	J & K	-435.02
37	JINDAL POWER	-487.59
38	Himachal Pradesh	-919.64
* 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		

<b>Table-16: DETAILS OF CONGESTION IN POWER EXCHANGES, JUNE 2011</b>			
	<b>Details of Congestion</b>	<b>IEX</b>	<b>PXIL</b>
A	Unconstrained Cleared Volume* (MU)	1174.57	109.92
B	Actual Cleared Volume and hence scheduled (MU)	1147.44	101.47
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MU) (A-B)	27.13	8.46
D	Volume of electricity that could not be cleared as % to Actual Cleared Volume	2%	8%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	18%	21%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	29%	24%
	6.00 - 12.00 hours	29%	29%
	12.00 - 18.00 hours	22%	25%
	18.00 - 24.00 hours	20%	23%
* This power would have been scheduled had there been no congestion.			