

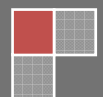


# Monthly Report on Short-term Transactions of Electricity in India

October, 2011



Economics Division  
Central Electricity Regulatory Commission  
3<sup>rd</sup> & 4<sup>th</sup> Floor, Chanderlok Building  
36, Janpath, New Delhi-110001.



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# Abbreviations

<b>Abbreviation</b>	<b>Expanded Version</b>
ACBIL	ACB India Limited
ACP	Area Clearing Price
ACV	Area Clearing Volume
AD HYDRO	AD Hydro Power Limited
BALCO	Bharat Aluminium Company Limited
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission
DVC	Damodar Valley Corporation
IEX	Indian Energy Exchange Limited
JINDAL POWER	Jindal Power Limited
KARCHAM WANGTOO	Jaypee Karcham Hydro Corporation Limited
LANKO_AMK	Lanco Amarkantak Power Private Limited
LANKO_KONDAPALLY	Lanco Kondapalli Power Limited
MUs	Million Units
NEW Grid	North, East, North-East and Western Regional Grid
NLDC	National Load Despatch Centre
NSPCL	NTPC - SAIL Power Company Private Limited
PX	Power Exchange
PXIL	Power Exchange India Limited
RGPPL	Ratnagiri Gas and Power Private Limited
RLDC	Regional Load Despatch Centre
RTC	Round - the- Clock
SHREE CEMENT	Shree Cement 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 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 October 2011 is as under:

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

During the month of October 2011, total electricity generation excluding generation from renewable and captive power plants in India was 74167.44 MUs (Table-1).

Of the total electricity generation, 6684.00 MUs (9.01%) were transacted through short-term, comprising of 3191.69 MUs (4.30%) through Bilateral (through traders and term-ahead contracts on Power Exchanges and directly between distribution companies), followed by 2158.24 MUs (2.91%) through UI and 1334.07 MUs (1.80%) through day ahead collective transactions on Power Exchanges (IEX and PXIL) (Table-1 & Chart-2).

Of the total short-term transactions, Bilateral constitute 47.75% (36.71% through traders and term-ahead contracts on Power Exchanges and 11.04% directly between distribution companies) followed by 32.29% through UI and 19.96% 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 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 44 trading licensees as on 31.10.2011, of which only 17 have engaged in trading during October

2011. Top 5 trading licenses had a share of 75.73% 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 0.1503 for the month of October 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 1244.12 MUs and 89.95 MUs respectively. The volume of total Buy bids and Sale bids was 2942.70 MUs and 1531.82 MUs respectively in IEX and 378.23 MUs and 128.87 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 (1.92 times) and in PXIL (2.93 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 24.37 MU in IEX (Table-6) and 18.70 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 ₹4.22/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 ₹4.19/kWh, ₹5.16/kWh and ₹5.02/kWh respectively. Minimum and Maximum sale price was ₹2.96/kWh and ₹8.07/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 ₹1.20/kWh, ₹14.01/kWh and ₹5.40/kWh respectively in IEX and ₹2.00/kWh, ₹14.10/kWh and ₹5.42/kWh respectively in PXIL (Table-5).

The weighted average price of electricity transacted in term-ahead market through the weekly contracts in IEX was ₹5.15/kWh (Table 6) and in PXIL was ₹4.50/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 ₹6.55/kWh in the NEW Grid and ₹5.52/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 ₹17.46/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 55.14% of the volume are Jindal Power Limited, Gujarat, Orissa, Chattisgarh and Sterlite Energy Limited. Top 5 regional entities purchasing 61.07% of the volume are Tamilnadu, Uttar Pradesh, Maharashtra, Andhra Pradesh and Punjab (Table-9 & 10).

Of the total Power Exchange transactions, top 5 regional entities selling 50.26% of the volume are Himachal Pradesh, Jaypee Karcham Hydro Corporation Limited, Karnataka, Chattisgarh and Rajasthan. Top 5 regional entities purchasing 71.42% of the volume are Tamilnadu, Maharashtra, Uttar Pradesh, Kerala and Gujarat (Table-11 & 12).

Of the total UI transactions, top 5 regional entities under drawing 40.91% of the volume are Delhi, Gujarat, Shree Cement Limited, Jharkhand and Damodar Valley Corporation. Top 5 regional entities overdrawing 53.48% of the volume are Uttar Pradesh, Haryana, Maharashtra, Rajasthan and Chattisgarh (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 Gujarat, Jindal Power Limited, Orissa, Sterlite Energy Limited and Lanco Amarkantak Power Private Limited and top 5 regional entities purchasing electricity are Uttar Pradesh, Tamilnadu, Maharashtra, Andhra Pradesh and Punjab.

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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 October 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 5% and 11% 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 72% in IEX and 76% in PXIL.

## **V: Inferences:**

- Important observation is that weighted average prices in the Day Ahead Market of Power exchanges in October 2011 have been higher than in the past six months of the year,

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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.



where they were in the range of ₹2.80 to ₹4.00 per unit. In October 2011, the prices have been about ₹5.40 to ₹5.42 per unit. Higher prices were due to coal shortages.

- The percentage of short-term transactions of electricity to total electricity generation was 9.01%.
- Of the total short-term transactions of electricity, 47.75% transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies) followed by 32.29% through UI and 19.96% through Power Exchanges.
- Top 5 trading licenses are having share of 75.73% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for volume of electricity traded by trading licensees was 0.1503 indicates moderate concentration of market power.
- The price of electricity transacted through Trading Licensees (₹4.22/kWh) was relatively low when compared with the price of electricity transacted through Power Exchanges (₹5.40/kWh in IEX and ₹5.42/kWh in PXIL).
- The price of electricity transacted through UI was ₹6.55/kWh in the NEW Grid and ₹5.52/kWh in the SR Grid. In the second week of October 2011, the average price of UI in the NEW Grid was relatively high (price range was between ₹6.54/kWh and ₹16.36/kWh). During the period, the grid frequency was low because of high demand supply mismatch for power i.e. mainly due to shortage of coal in various power plants.
- The gap between the volume of sale bids and buy bids placed through power exchanges shows that there was more demand in IEX (1:1.92) and in PXIL (1:2.93) when compared with the supply offered through these exchanges.
- Top 5 regional entities selling electricity are Gujarat, Jindal Power Limited, Orissa, Sterlite Energy Limited and Lanco Amarkantak Power Private Limited and top 5 regional entities purchasing electricity are Uttar Pradesh, Tamilnadu, Maharashtra, Andhra Pradesh and Punjab.
- The volume of electricity that could not be cleared due to congestion was about 5% and 11% of the actual cleared volume in IEX and PXIL, respectively. In percentage of time terms, congestion occurred 72% of the time (535 hrs in the month) in IEX and 76% of the time (562 hrs in the month) in PXIL.

<b>Format-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (MUs), OCTOBER 2011</b>						<b>Total Electricity Generation (MUs) as given at CEA Website*</b>
<b>Date</b>	<b>Bilateral</b>		<b>Power Exchange (Area Clearing Volume# of day ahead market)</b>		<b>Unscheduled Interchange (Over Draw+Under Generation)</b>	
	<b>Through Traders and PXs**</b>	<b>Direct</b>	<b>IEX</b>	<b>PXI</b>		
1-Oct-11	100.285	16.671	45.31	6.84	81.715	2458.95
2-Oct-11	97.850	17.562	44.27	6.56	88.330	2390.48
3-Oct-11	80.203	19.360	47.29	5.27	91.096	2419.73
4-Oct-11	79.161	17.012	52.47	8.19	85.113	2440.87
5-Oct-11	82.484	19.316	54.60	10.15	71.759	2455.45
6-Oct-11	80.619	18.804	48.60	3.92	84.236	2388.74
7-Oct-11	85.080	19.038	45.78	4.86	69.812	2400.98
8-Oct-11	81.017	20.099	41.63	8.10	57.110	2393.86
9-Oct-11	91.778	16.829	38.02	3.50	52.817	2327.44
10-Oct-11	85.326	15.649	35.48	4.06	57.087	2333.74
11-Oct-11	83.398	15.293	32.63	5.05	60.111	2313.09
12-Oct-11	82.861	17.787	33.35	0.42	59.470	2396.73
13-Oct-11	72.519	18.010	31.23	1.88	62.576	2414.68
14-Oct-11	71.168	18.010	32.51	0.08	56.392	2421.12
15-Oct-11	72.794	18.010	35.81	0.12	49.563	2412.74
16-Oct-11	68.066	20.731	40.35	0.32	55.630	2377.27
17-Oct-11	65.637	23.938	45.24	0.20	58.993	2418.40
18-Oct-11	61.134	25.594	47.89	1.54	65.180	2413.15
19-Oct-11	62.435	27.544	46.67	1.78	66.597	2445.34
20-Oct-11	67.688	31.272	43.82	0.63	65.967	2459.16
21-Oct-11	68.538	29.451	42.75	1.98	74.843	2487.83
22-Oct-11	70.782	29.607	41.03	1.27	75.289	2487.17
23-Oct-11	70.122	30.871	38.77	1.05	70.346	2414.14
24-Oct-11	74.996	34.773	36.34	0.70	62.186	2439.29
25-Oct-11	87.726	37.275	32.68	0.73	73.680	2455.20
26-Oct-11	91.057	44.551	31.77	0.72	96.050	2322.36
27-Oct-11	94.260	27.218	28.98	1.18	82.823	2258.27
28-Oct-11	92.580	28.418	32.32	1.88	66.356	2284.51
29-Oct-11	78.040	26.421	44.74	2.63	62.832	2295.94
30-Oct-11	78.040	26.085	35.62	2.73	72.340	2292.42
31-Oct-11	76.172	26.678	36.15	1.59	81.945	2348.390
<b>Total</b>	<b>2453.81</b>	<b>737.88</b>	<b>1244.12</b>	<b>89.95</b>	<b>2158.24</b>	<b>74167.44</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), OCTOBER 2011**

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-Oct-11	5.10	12.00	6.47	5.35	9.70	6.76	2.33	12.22	5.95	2.95	17.46	7.47	
2-Oct-11	3.73	10.00	5.15	5.00	9.80	5.69	0.31	12.22	4.01	0.00	12.22	6.44	
3-Oct-11	4.39	6.58	5.34	3.50	8.00	5.08	2.95	17.46	6.91	2.48	12.22	5.81	
4-Oct-11	4.70	7.16	5.54	4.75	7.01	5.55	2.48	12.22	5.88	2.17	12.22	4.98	
5-Oct-11	5.00	6.47	5.38	5.00	6.50	5.36	3.26	12.22	7.82	1.09	12.22	5.43	
6-Oct-11	4.00	6.25	4.91	5.00	6.01	5.25	2.33	17.46	6.49	2.64	12.22	5.54	
7-Oct-11	4.99	6.50	5.33	4.25	6.25	5.25	2.64	17.46	10.83	2.48	8.26	4.98	
8-Oct-11	5.00	6.71	5.50	5.00	6.46	5.37	3.72	17.46	14.43	3.10	12.22	6.43	
9-Oct-11	5.00	7.01	5.50	5.00	10.00	5.33	3.88	17.46	13.75	1.71	17.46	5.92	
10-Oct-11	5.00	8.00	6.04	5.20	10.21	6.12	4.03	17.46	16.36	2.33	12.22	5.32	
11-Oct-11	5.00	8.60	6.72	5.75	8.50	6.24	6.38	17.46	15.62	2.17	12.22	6.72	
12-Oct-11	5.00	8.65	7.00	5.00	9.31	7.51	3.72	17.46	12.64	2.64	12.22	6.08	
13-Oct-11	5.00	8.80	7.65	5.00	9.05	7.23	2.95	17.46	8.69	1.86	12.22	6.16	
14-Oct-11	5.00	10.00	8.03	5.05	12.00	7.56	1.71	17.46	6.54	2.48	12.22	6.92	
15-Oct-11	5.00	12.00	7.38	6.50	13.00	7.65	2.17	17.46	6.77	3.26	12.22	6.27	
16-Oct-11	3.69	12.00	6.03	5.00	13.00	6.01	0.16	7.32	3.93	1.86	12.22	5.50	
17-Oct-11	3.25	12.00	5.88	5.00	13.00	5.97	2.33	12.22	5.05	1.55	12.22	5.02	
18-Oct-11	3.35	12.00	6.15	3.85	12.00	6.10	2.02	12.22	4.56	2.64	12.22	6.17	
19-Oct-11	3.38	12.00	6.35	5.00	12.00	6.12	2.95	12.22	6.30	3.57	12.22	6.50	
20-Oct-11	3.15	13.00	5.81	5.00	14.01	6.52	1.86	12.22	5.48	3.26	12.22	7.55	
21-Oct-11	3.15	14.01	5.53	4.25	13.00	5.78	1.24	12.22	4.36	2.48	17.46	8.49	
22-Oct-11	3.20	8.33	4.32	3.90	14.10	6.02	1.09	7.79	3.51	3.26	12.22	6.83	
23-Oct-11	2.75	9.01	4.25	2.59	13.00	5.66	0.93	7.32	3.43	1.86	12.22	5.49	
24-Oct-11	3.30	10.00	5.25	2.49	13.00	5.70	2.02	12.22	4.73	0.31	12.22	5.10	
25-Oct-11	3.25	10.10	5.69	3.17	13.50	6.51	0.16	7.32	3.04	0.16	7.79	3.79	
26-Oct-11	2.50	6.00	4.58	2.39	10.00	3.55	0.00	8.26	2.14	0.00	4.03	2.20	
27-Oct-11	1.20	13.00	3.73	2.29	14.00	3.92	0.00	5.44	2.10	0.00	6.85	2.79	
28-Oct-11	2.30	9.00	3.14	2.00	4.16	2.63	0.47	6.38	2.44	0.47	12.22	3.56	
29-Oct-11	2.30	6.00	2.91	2.00	3.51	2.79	0.62	7.32	2.80	1.40	6.38	3.73	
30-Oct-11	2.20	6.00	2.67	2.00	5.00	2.61	0.31	6.38	2.93	1.09	8.26	3.90	
31-Oct-11	2.38	6.50	3.12	2.75	9.00	3.88	1.40	12.22	3.64	1.24	7.79	4.11	
	<b>1.20#</b>	<b>14.01#</b>	<b>5.40</b>	<b>2.00#</b>	<b>14.10#</b>	<b>5.42</b>	<b>0.00#</b>	<b>17.46#</b>	<b>6.55</b>	<b>0.00#</b>	<b>17.46#</b>	<b>5.52</b>	

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), OCTOBER 2011**

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	46.56	241.52	194.96	2.50	71.73	69.23	85.91	90.32	4.42	268.61
Haryana	56.78	139.85	83.07	0.00	21.71	21.71	54.88	192.80	137.92	242.70
Rajasthan	64.59	0.00	-64.59	106.06	14.32	-91.74	41.24	134.71	93.46	-62.87
Delhi	117.87	81.21	-36.66	74.91	12.43	-62.48	221.04	9.84	-211.20	-310.33
Uttar Pradesh	9.80	477.33	467.54	0.00	169.39	169.39	59.54	389.65	330.11	967.04
Uttarakhand	35.41	35.45	0.04	0.00	2.93	2.93	22.68	55.25	32.57	35.55
Himachal Pradesh	15.47	93.72	78.25	169.70	0.00	-169.70	42.92	13.35	-29.57	-121.03
J & K	137.19	20.85	-116.34	6.54	0.00	-6.54	14.38	76.68	62.30	-60.58
UT Chandigarh	0.00	11.74	11.74	8.91	0.84	-8.07	11.89	1.71	-10.18	-6.51
MP	54.63	143.00	88.36	40.01	61.17	21.15	80.96	117.35	36.39	145.90
Maharashtra	6.46	375.18	368.72	79.33	226.37	147.04	65.08	175.96	110.88	626.64
Gujarat	495.52	0.00	-495.52	89.14	75.96	-13.18	218.18	40.09	-178.09	-686.79
Chattisgarh	306.40	74.29	-232.11	108.23	5.47	-102.76	15.99	130.78	114.79	-220.08
Daman and Diu	0.00	16.37	16.37	0.00	0.00	0.00	16.04	6.15	-9.89	6.48
Dadra & Nagar Haveli	0.00	76.18	76.18	0.00	6.48	6.48	19.17	11.13	-8.04	74.61
Andhra Pradesh	26.32	336.92	310.60	25.41	47.54	22.13	59.46	27.56	-31.90	300.83
Karnataka	97.63	145.01	47.38	120.88	60.86	-60.02	19.17	31.95	12.79	0.14
Kerala	0.00	62.73	62.73	0.00	89.30	89.30	4.58	39.21	34.64	186.67
Tamilnadu	0.00	518.16	518.16	0.00	391.75	391.75	38.48	64.91	26.43	936.35
Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	22.92	1.82	-21.10	-21.10
West Bengal	43.25	53.99	10.74	26.95	51.54	24.59	86.99	53.39	-33.60	1.73
Orissa	340.38	0.00	-340.38	18.14	0.00	-18.14	63.02	14.79	-48.23	-406.75
Bihar	0.00	116.48	116.48	0.00	0.00	0.00	73.12	7.24	-65.88	50.60
Jharkhand	0.00	74.40	74.40	0.00	0.00	0.00	91.61	4.23	-87.38	-12.98
Sikkim	19.79	5.98	-13.81	32.88	0.00	-32.88	8.65	2.97	-5.68	-52.37
DVC	138.06	26.86	-111.21	20.30	0.00	-20.30	88.66	34.27	-54.39	-185.90
Arunachal Pradesh	1.47	0.00	-1.47	2.14	1.21	-0.93	2.77	5.91	3.14	0.74
Assam	4.21	41.66	37.45	2.34	16.70	14.36	20.18	10.38	-9.81	42.01
Manipur	0.00	0.00	0.00	0.00	0.00	0.00	11.63	1.81	-9.82	-9.82
Meghalaya	4.34	0.00	-4.34	8.75	0.00	-8.75	4.89	4.39	-0.50	-13.59
Mizoram	1.16	0.00	-1.16	7.14	0.00	-7.14	3.55	2.19	-1.36	-9.66
Nagaland	10.08	0.00	-10.08	2.40	0.00	-2.40	2.16	8.34	6.17	-6.31
Tripura	0.00	0.00	0.00	9.65	0.25	-9.40	7.86	0.92	-6.94	-16.34
GOA	0.00	22.81	22.81	0.06	6.11	6.05	22.75	12.33	-10.42	18.44
JINDAL POWER	496.05	0.00	-496.05	105.31	0.00	-105.31	20.57	0.95	-19.62	-620.98
LANKO_AMK	275.17	0.00	-275.16	28.91	0.00	-28.91	29.45	10.23	-19.22	-323.29
LANKO_KONDAPALLY	166.50	0.00	-166.50	19.07	0.00	-19.07	1.97	2.07	0.10	-185.46
STERLITE	299.71	0.00	-299.71	42.43	0.00	-42.43	24.71	10.46	-14.25	-356.39
AD HYDRO	20.65	0.00	-20.65	3.02	0.00	-3.02	0.72	0.95	0.23	-23.43
KARCHAM WANGTOO	98.66	0.00	-98.66	165.65	0.00	-165.65	18.50	49.00	30.50	-233.81
SHREE CEMENT	38.21	0.00	-38.21	4.89	0.00	-4.89	134.44	0.12	-134.32	-177.42
NSPCL	29.84	0.00	-29.84	0.00	0.00	0.00	2.47	0.54	-1.93	-31.77
MAITHON POWER LTD	56.68	0.00	-56.68	2.37	0.00	-2.37	0.00	62.12	62.12	3.07
ACBIL	0.00	0.00	0.00	0.00	0.00	0.00	0.02	1.47	1.45	1.45
BALCO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.61	0.61	0.61
RGPPL(Dabhol)	0.00	0.00	0.00	0.00	0.00	0.00	7.50	1.71	-5.78	-5.78

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,

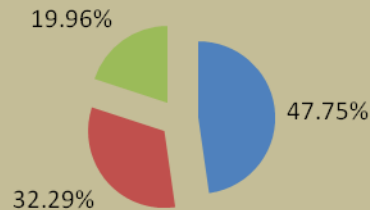
\*\*\* Total net includes net of transactions through bilateral, power exchange and UI

**Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), OCTOBER 2011**

Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	3191.69	47.75%	4.30%
	(i) Through Traders and PXs	2453.81	36.71%	3.31%
	(ii) Direct	737.88	11.04%	0.99%
2	Through Power Exchanges	1334.07	19.96%	1.80%
	IEX	1244.12	18.61%	1.68%
	PXIL	89.95	1.35%	0.12%
3	Through UI	2158.24	32.29%	2.91%
	<b>Total</b>	<b>6684.00</b>	<b>100.00%</b>	<b>9.01%</b>
	<b>Total Generation</b>	<b>74167.44</b>	–	–

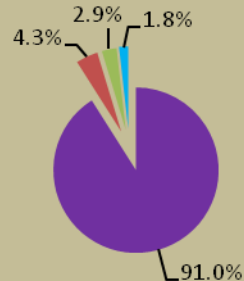
Source: NLDC

**Chart-1: Volume of Short-term Transactions of Electricity, October 2011**



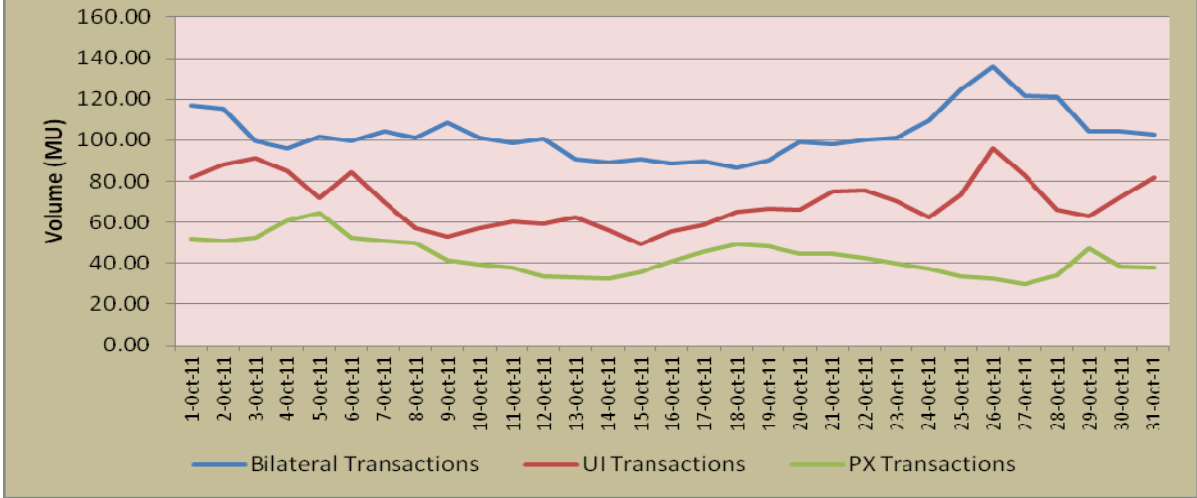
■ Bilateral ■ Unscheduled Interchange ■ Power Exchanges

**Chart-2: Volume of Various Kinds of Electricity Transactions in Total Electricity Generation, October 2011**



■ Long-term ■ Bilateral ■ Through UI ■ Through Power Exchanges

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



**Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, OCTOBER 2011**

Sr.No	Name of the Trading Licensee	% Share in total Volume transacted by Trading Licensees	Herfindahl-Hirschman Index
1	PTC India Ltd	27.41%	0.0751
2	National Energy Trading & Services Ltd	17.18%	0.0295
3	NTPC Vidyut Vyapar Nigam Ltd	16.00%	0.0256
4	Adani Enterprises Ltd	8.10%	0.0066
5	Tata Power Trading Company (P) Ltd	7.04%	0.0050
6	Reliance Energy Trading (P) Ltd	5.17%	0.0027
7	JSW Power Trading Company Ltd	4.78%	0.0023
8	Knowledge Infrastructure Systems (P) Ltd	3.68%	0.0014
9	Jaiprakash Associate Ltd.	3.51%	0.0012
10	Shree Cement Ltd.	2.07%	0.0004
11	Instinct Infra & Power Ltd.	1.41%	0.0002
12	Global Energy (P) Ltd.	1.34%	0.0002
13	GMR Energy Trading Ltd	1.15%	0.0001
14	Jindal Power Trading Company Ltd.	0.79%	0.0001
15	RPG Power Trading Company Ltd.	0.32%	0.0000
16	Mittal Processors (P) Ltd.	0.03%	0.0000
17	Essar Electric Power Development Corp. Ltd.	0.02%	0.0000
	<b>TOTAL</b>	<b>100.00%</b>	<b>0.1503</b>
	<b>Top 5 trading licensees</b>	<b>75.73%</b>	

*Note: Volume of electricity transacted by the trading licensees includes bilateral transactions (inter-state) and the transactions undertaken through power exchanges.*

*Source: Information submitted by trading licensees*

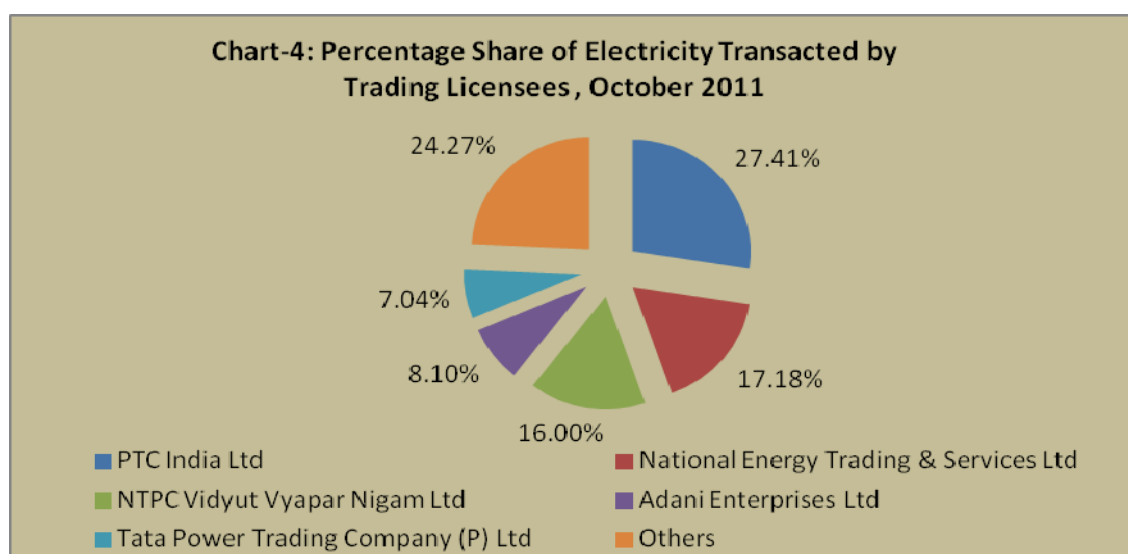


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, OCTOBER 2011		
Sr.No		Sale Price of Traders (₹/kWh)
1	Minimum	2.96
2	Maximum	8.07
3	Weighted Average	4.22

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), OCTOBER 2011		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	4.19
2	PEAK	5.16
3	OFF PEAK	5.02

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, OCTOBER 2011			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	1.20	2.00
2	Maximum	14.01	14.10
3	Weighted Average	5.40	5.42

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, OCTOBER 2011			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra Day Contracts	2.94	5.93
2	Day Ahead Contingency Contracts	1.03	8.96
3	Daily Contracts	28.4	5.86
4	Weekly Contracts	24.37	5.15
	<b>Total</b>	<b>56.73</b>	

Source: IEX

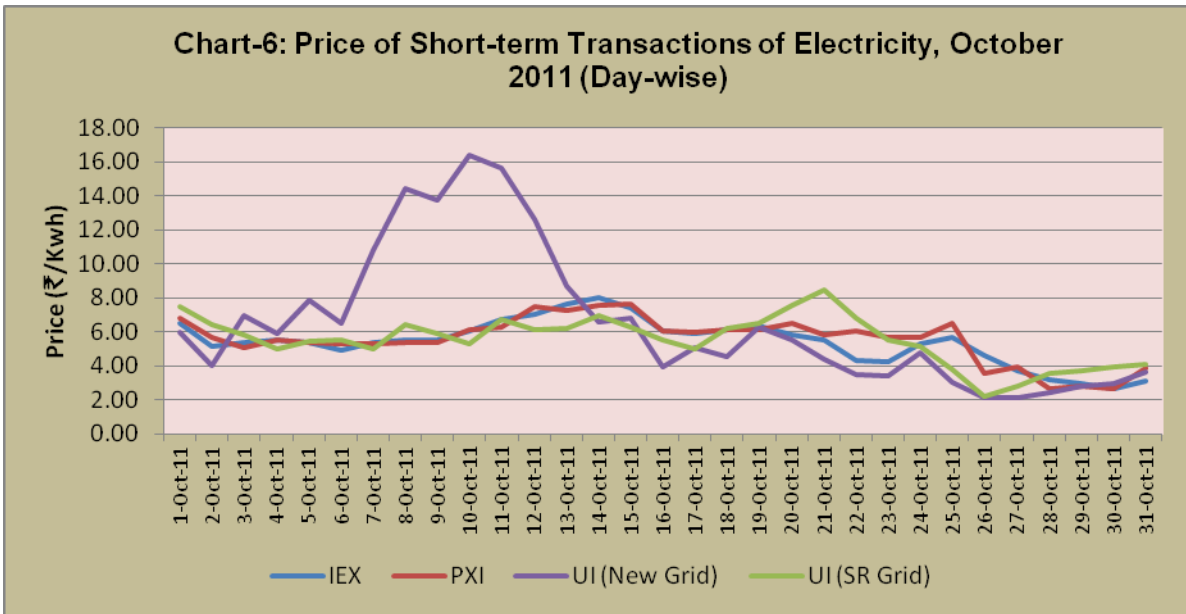
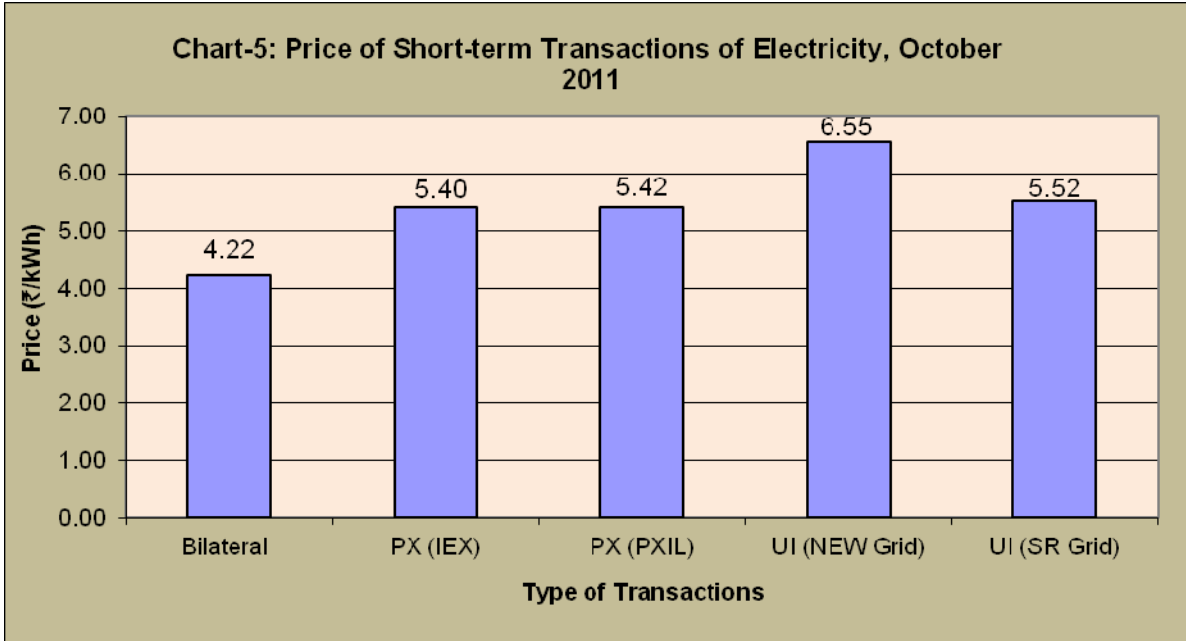
Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, OCTOBER 2011			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Weekly Contracts	18.70	4.50
	<b>Total</b>	<b>18.70</b>	

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH UI, OCTOBER 2011			
Sr.No		Price in NEW Grid (₹/kWh)	Price in SR Grid (₹/kWh)
1	Minimum	0.00	0.00
2	Maximum	17.46	17.46
3	Average	6.55	5.52

Source: NLDC





**Table-9: VOLUME OF ELECTRICITY SALE THROUGH BILATERAL, OCTOBER 2011**

<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of sale (MUs)</b>	<b>% of Volume</b>
JINDAL POWER	496.05	14.11%
Gujarat	495.52	14.10%
Orissa	340.38	9.68%
Chattisgarh	306.40	8.72%
STERLITE	299.71	8.53%
LANKO_AMK	275.17	7.83%
LANKO_KONDAPALLY	166.50	4.74%
DVC	138.06	3.93%
J & K	137.19	3.90%
Delhi	117.87	3.35%
KARCHAM WANGTOO	98.66	2.81%
Karnataka	97.63	2.78%
Rajasthan	64.59	1.84%
Haryana	56.78	1.62%
MAITHON POWER LTD	56.68	1.61%
MP	54.63	1.55%
Punjab	46.56	1.32%
West Bengal	43.25	1.23%
SHREE CEMENT	38.21	1.09%
Uttarakhand	35.41	1.01%
NSPCL	29.84	0.85%
Andhra Pradesh	26.32	0.75%
AD HYDRO	20.65	0.59%
Sikkim	19.79	0.56%
Himachal Pradesh	15.47	0.44%
Nagaland	10.08	0.29%
Uttar Pradesh	9.80	0.28%
Maharashtra	6.46	0.18%
Meghalaya	4.34	0.12%
Assam	4.21	0.12%
Arunachal Pradesh	1.47	0.04%
Mizoram	1.16	0.03%
<b>Total</b>	<b>3514.85</b>	<b>100.00%</b>
<b>Volume of sale by top 5 States</b>	<b>1938.06</b>	<b>55.14%</b>

<b>Table-10: VOLUME OF ELECTRICITY PURCHASE THROUGH BILATERAL, OCTOBER 2011</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
Tamilnadu	518.16	16.23%
Uttar Pradesh	477.33	14.96%
Maharashtra	375.18	11.75%
Andhra Pradesh	336.92	10.56%
Punjab	241.52	7.57%
Karnataka	145.01	4.54%
MP	143.00	4.48%
Haryana	139.85	4.38%
Bihar	116.48	3.65%
Himachal Pradesh	93.72	2.94%
Delhi	81.21	2.54%
Dadra & Nagar Haveli	76.18	2.39%
Jharkhand	74.40	2.33%
Chattisgarh	74.29	2.33%
Kerala	62.73	1.97%
West Bengal	53.99	1.69%
Assam	41.66	1.31%
Uttarakhand	35.45	1.11%
DVC	26.86	0.84%
GOA	22.81	0.71%
J & K	20.85	0.65%
Daman and Diu	16.37	0.51%
UT Chandigarh	11.74	0.37%
Sikkim	5.98	0.19%
<b>Total</b>	<b>3191.69</b>	<b>100.00%</b>
<b>Volume of sale by top 5 States</b>	<b>1949.11</b>	<b>61.07%</b>

<b>Table-11: VOLUME OF ELECTRICITY SALE THROUGH POWER EXCHANGES, OCTOBER 2011</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Sale (MUs)</b>	<b>% of Volume</b>
Himachal Pradesh	169.70	12.72%
KARCHAM WANGTOO	165.65	12.42%
Karnataka	120.88	9.06%
Chattisgarh	108.23	8.11%
Rajasthan	106.06	7.95%
JINDAL POWER	105.31	7.89%
Gujarat	89.14	6.68%
Maharashtra	79.33	5.95%
Delhi	74.91	5.62%
STERLITE	42.43	3.18%
MP	40.01	3.00%
Sikkim	32.88	2.46%
LANKO_AMK	28.91	2.17%
West Bengal	26.95	2.02%
Andhra Pradesh	25.41	1.91%
DVC	20.30	1.52%
LANKO_KONDAPALLY	19.07	1.43%
Orissa	18.14	1.36%
Tripura	9.65	0.72%
UT Chandigarh	8.91	0.67%
Meghalaya	8.75	0.66%
Mizoram	7.14	0.54%
J & K	6.54	0.49%
SHREE CEMENT	4.89	0.37%
AD HYDRO	3.02	0.23%
Punjab	2.50	0.19%
Nagaland	2.40	0.18%
MAITHON POWER LTD	2.37	0.18%
Assam	2.34	0.18%
Arunachal Pradesh	2.14	0.16%
<b>Total</b>	<b>1333.99</b>	<b>100.00%</b>
<b>Volume of sale by top 5 States</b>	<b>670.52</b>	<b>50.26%</b>

<b>Table-12: VOLUME OF ELECTRICITY PURCHASE THROUGH POWER EXCHANGES, OCTOBER 2011</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
Tamilnadu	391.75	29.37%
Maharashtra	226.37	16.97%
Uttar Pradesh	169.39	12.70%
Kerala	89.30	6.69%
Gujarat	75.96	5.69%
Punjab	71.73	5.38%
MP	61.17	4.58%
Karnataka	60.86	4.56%
West Bengal	51.54	3.86%
Andhra Pradesh	47.54	3.56%
Haryana	21.71	1.63%
Assam	16.70	1.25%
Rajasthan	14.32	1.07%
Delhi	12.43	0.93%
Dadra & Nagar Haveli	6.48	0.49%
GOA	6.11	0.46%
Chattisgarh	5.47	0.41%
Uttarakhand	2.93	0.22%
Arunachal Pradesh	1.21	0.09%
UT Chandigarh	0.84	0.06%
Tripura	0.25	0.02%
<b>Total</b>	<b>1334.07</b>	<b>100.00%</b>
<b>Volume of purchase by top 5 States</b>	<b>952.76</b>	<b>71.42%</b>

<b>Table-13: VOLUME OF ELECTRICITY EXPORT THROUGH UI, OCTOBER 2011</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Export (MUs)</b>	<b>% of Volume</b>
Delhi	221.04	12.00%
Gujarat	218.18	11.84%
SHREE CEMENT	134.44	7.30%
Jharkhand	91.61	4.97%
DVC	88.66	4.81%
West Bengal	86.99	4.72%
Punjab	85.91	4.66%
MP	80.96	4.39%
Bihar	73.12	3.97%
Maharashtra	65.08	3.53%
Orissa	63.02	3.42%
Uttar Pradesh	59.54	3.23%
Andhra Pradesh	59.46	3.23%
Haryana	54.88	2.98%
Himachal Pradesh	42.92	2.33%
Rajasthan	41.24	2.24%
Tamilnadu	38.48	2.09%
LANKO_AMK	29.45	1.60%
STERLITE	24.71	1.34%
Pondicherry	22.92	1.24%
GOA	22.75	1.23%
Uttarakhand	22.68	1.23%
JINDAL POWER	20.57	1.12%
Assam	20.18	1.10%
Dadra & Nagar Haveli	19.17	1.04%
Karnataka	19.17	1.04%
KARCHAM WANGTOO	18.50	1.00%
Daman and Diu	16.04	0.87%
Chattisgarh	15.99	0.87%
J & K	14.38	0.78%
UT Chandigarh	11.89	0.65%
Manipur	11.63	0.63%
Sikkim	8.65	0.47%
Tripura	7.86	0.43%
RGPPL(Dabhol)	7.50	0.41%
Meghalaya	4.89	0.27%
Kerala	4.58	0.25%
Mizoram	3.55	0.19%
Arunachal Pradesh	2.77	0.15%
NSPCL	2.47	0.13%
Nagaland	2.16	0.12%
LANKO_KONDAPALLY	1.97	0.11%
AD HYDRO	0.72	0.04%
ACBIL	0.02	0.00%
<b>Total</b>	<b>1842.68</b>	<b>100.00%</b>
<b>Volume of Export by top 5 States</b>	<b>753.93</b>	<b>40.91%</b>

<b>Table-14: VOLUME OF ELECTRICITY IMPORT THROUGH UI, OCTOBER 2011</b>		
<b>Name of the State/UT/Other Regional Entity</b>	<b>Volume of Import (MUs)</b>	<b>% of Volume</b>
Uttar Pradesh	389.65	20.35%
Haryana	192.80	10.07%
Maharashtra	175.96	9.19%
Rajasthan	134.71	7.04%
Chattisgarh	130.78	6.83%
MP	117.35	6.13%
Punjab	90.32	4.72%
J & K	76.68	4.00%
Tamilnadu	64.91	3.39%
MAITHON POWER LTD	62.12	3.24%
Uttarakhand	55.25	2.89%
West Bengal	53.39	2.79%
KARCHAM WANGTOO	49.00	2.56%
Gujarat	40.09	2.09%
Kerala	39.21	2.05%
DVC	34.27	1.79%
Karnataka	31.95	1.67%
Andhra Pradesh	27.56	1.44%
Orissa	14.79	0.77%
Himachal Pradesh	13.35	0.70%
GOA	12.33	0.64%
Dadra & Nagar Haveli	11.13	0.58%
STERLITE	10.46	0.55%
Assam	10.38	0.54%
LANKO_AMK	10.23	0.53%
Delhi	9.84	0.51%
Nagaland	8.34	0.44%
Bihar	7.24	0.38%
Daman and Diu	6.15	0.32%
Arunachal Pradesh	5.91	0.31%
Meghalaya	4.39	0.23%
Jharkhand	4.23	0.22%
Sikkim	2.97	0.15%
Mizoram	2.19	0.11%
LANKO_KONDAPALLY	2.07	0.11%
Pondicherry	1.82	0.10%
Manipur	1.81	0.09%
RGPPL(Dabhol)	1.71	0.09%
UT Chandigarh	1.71	0.09%
ACBIL	1.47	0.08%
AD HYDRO	0.95	0.05%
JINDAL POWER	0.95	0.05%
Tripura	0.92	0.05%
BALCO	0.61	0.03%
NSPCL	0.54	0.03%
SHREE CEMENT	0.12	0.01%
<b>Total</b>	<b>1914.61</b>	<b>100.00%</b>
<b>Volume of Export by top 5 States</b>	<b>1023.90</b>	<b>53.48%</b>

**Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY  
(REGIONAL ENTITY-WISE), OCTOBER 2011**

Sr.No	Name of the State/UT/Other Regional Entity	Total volume of net short-term transactions of electricity*
1	Uttar Pradesh	967.04
2	Tamilnadu	936.35
3	Maharashtra	626.64
4	Andhra Pradesh	300.83
5	Punjab	268.61
6	Haryana	242.70
7	Kerala	186.67
8	MP	145.90
9	Dadra & Nagar Haveli	74.61
10	Bihar	50.60
11	Assam	42.01
12	Uttarakhand	35.55
13	GOA	18.44
14	Daman and Diu	6.48
15	MAITHON POWER LTD	3.07
16	West Bengal	1.73
17	ACBIL	1.45
18	Arunachal Pradesh	0.74
19	BALCO	0.61
20	Karnataka	0.14
21	RGPPPL(Dabhol)	-5.78
22	Nagaland	-6.31
23	UT Chandigarh	-6.51
24	Mizoram	-9.66
25	Manipur	-9.82
26	Jharkhand	-12.98
27	Meghalaya	-13.59
28	Tripura	-16.34
29	Pondicherry	-21.10
30	AD HYDRO	-23.43
31	NSPCL	-31.77
32	Sikkim	-52.37
33	J & K	-60.58
34	Rajasthan	-62.87
35	Himachal Pradesh	-121.03
36	SHREE CEMENT	-177.42
37	LANKO_KONDAPALLY	-185.46
38	DVC	-185.90
39	Chattisgarh	-220.08
40	KARCHAM WANGTOO	-233.81
41	Delhi	-310.33
42	LANKO_AMK	-323.29
43	STERLITE	-356.39
44	Orissa	-406.75
45	JINDAL POWER	-620.98
46	Gujarat	-686.79

\* 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, OCTOBER 2011</b>			
	<b>Details of Congestion</b>	<b>IEX</b>	<b>PXIL</b>
A	Unconstrained Cleared Volume* (MUs)	1310.77	100.20
B	Actual Cleared Volume and hence scheduled (MUs)	1244.12	89.95
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	66.65	10.25
D	Volume of electricity that could not be cleared as % to Actual Cleared Volume	5%	11%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	72%	76%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	22%	22%
	6.00 - 12.00 hours	29%	27%
	12.00 - 18.00 hours	23%	25%
	18.00 - 24.00 hours	26%	27%
* This power would have been scheduled had there been no congestion.			

Source: IEX & PXIL