Monthly Report on Short-term Transactions of Electricity in India

July, 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 July 2011 is as under:

I: Volume of Short-term Transactions of Electricity

During the month of July 2011, total electricity generation excluding generation from renewable and captive power plants in India was 74103.75 MUs (Table-1).

Of the total electricity generation, 9985.95 MUs (13.48%) were transacted through short-term, comprising of 6313.15 MUs (8.52%) through Bilateral (through traders and term-ahead contracts on Power Exchanges and directly between distribution companies), followed by 2412.18 MUs (3.26%) through UI and 1260.62 MUs (1.70%) through day ahead collective transactions on Power Exchanges (IEX and PXIL) (Table-1 & Chart-2).

Of the total short-term transactions, Bilateral constitute 63.22% (47.59% through traders and term-ahead contracts on Power Exchanges and 15.63% directly between distribution companies) followed by 24.16% through UI and 12.62% 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 31.7.2011, of which only 15 have engaged in trading during July 2011. Top 5 trading licenses had a share of 74% 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 0.1660 for the month of July 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 1114.43 MUs and 146.19 MUs respectively. The volume of total Buy bids and Sale bids was 1606.74 MUs and 1911.30 MUs respectively in IEX and 242.88 MUs and 338.98 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 (0.84 times) and in PXIL (0.72 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 11.04 MU in IEX (Table-6) and 13.15 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 ₹3.90/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 ₹3.90/kWh, ₹3.95/kWh and ₹3.70/kWh respectively. Minimum and Maximum sale price was ₹2.34/kWh and ₹6.57/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 was ₹1.60/kWh, ₹9.00/kWh and ₹2.97/kWh respectively in IEX and ₹1.00/kWh, ₹10.00/kWh and ₹3.22/kWh respectively in PXIL (Table-5).

The weighted average price of electricity transacted in term-ahead market through the weekly contracts in IEX was ₹5.37/kWh and in PXIL was ₹3.84/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 ₹3.55/kWh in the NEW Grid and ₹3.42/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[1]-Wise)

Of the total bilateral transactions, top 5 regional entities selling 51% of the volume are Gujarat, Himachal Pradesh, Jindal Power Ltd, Rajasthan and Jammu & Kashmir. Top 5 regional entities purchasing 79% of the volume are Uttar Pradesh, Punjab, Haryana, Tamil Nadu and Delhi (Table-9 & 10).

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

Of the total UI transactions, top 5 regional entities underdrawing 46% of the volume are Delhi, Madhya Pradesh, Gujarat, Maharashtra and Haryana. Top 5 regional entities overdrawing 56% of the volume are Rajasthan, Chattisgarh, Uttar Pradesh, West Bengal and Gujarat (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, Himachal Pradesh, Jindal Power Ltd, Madhya Pradesh and Karcham Wangtoo Hydro Electric Project and top 5 regional entities purchasing electricity are Punjab, Uttar Pradesh, Haryana, Tamil Nadu and Andhra Pradesh.

[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: Congestion[2] 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 July 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 been 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 4% and 9% 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 42% in IEX and 44% in PXIL.

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[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: Inferences:

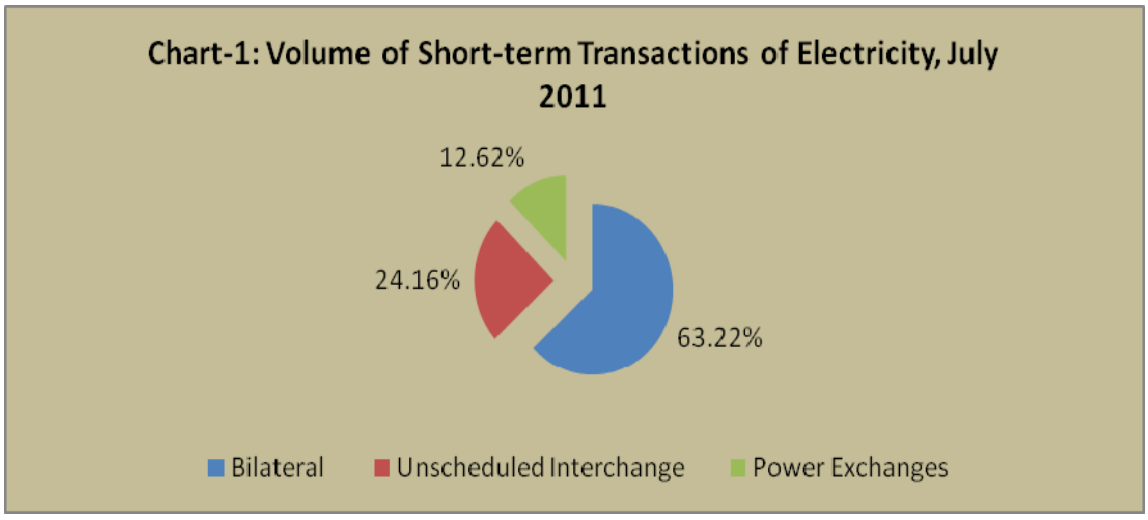
- The percentage of short-term transactions of electricity to total electricity generation was 13.48%.
- Of the total short-term transactions of electricity, 63.22% transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies) followed by 24.16% through UI and 12.62% through Power Exchanges.
- Top 5 trading licenses are having share of 74% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for volume of electricity traded by trading licensees was 0.1660 indicates moderate concentration of market power.
- The price of electricity transacted through Trading Licensees (₹3.90/kWh) was relatively high when compared with the price of electricity transacted through Power Exchanges (₹2.97/kWh in IEX and ₹3.22/kWh in PXIL). The price of electricity transacted through UI was ₹3.55/kWh in the NEW Grid and ₹3.42/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 (1:0.84) and in PXIL (1:0.72) when compared with the supply offered through these exchanges.
- Top 5 regional entities selling electricity are Gujarat, Himachal Pradesh, Jindal Power Ltd, Madhya Pradesh and Karcham Wangtoo Hydro Electric Project and top 5 regional entities purchasing electricity are Punjab, Uttar Pradesh, Haryana, Tamil Nadu and Andhra Pradesh.
- The volume of electricity that could not be cleared due to congestion was about 4% and 9% of the actual cleared volume in IEX and PXIL, respectively. In percentage of time terms, congestion occurred 42% of the time (316 hrs in the month) in IEX and 44% of the time (327 hrs in the month) in PXIL.

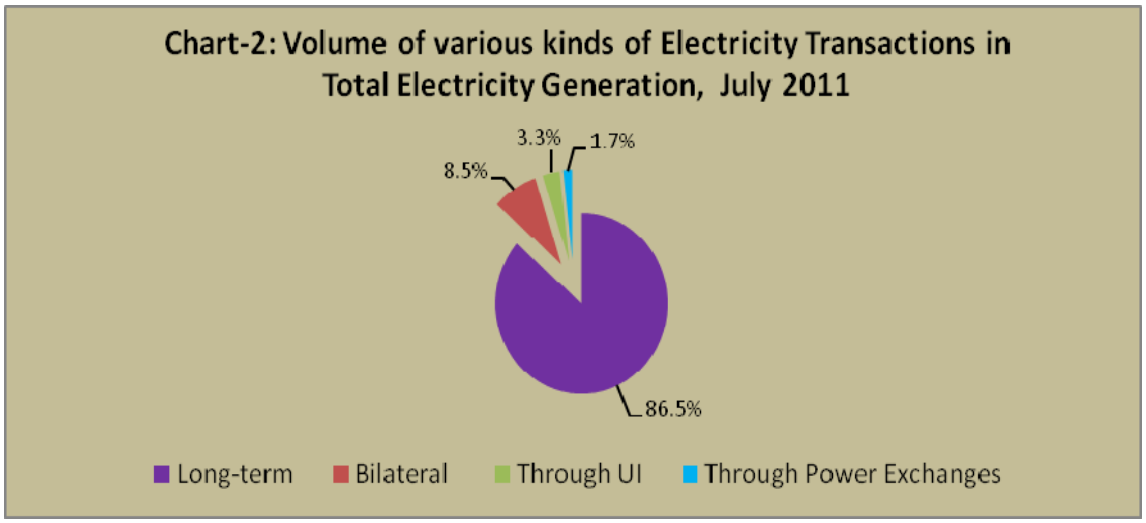
Format-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (MUs)						
Month: July 2011						
Date	Bilateral		Power Exchange (Area Clearing Volume# of day ahead market)		Unscheduled Interchange (Over Drawl+Under Generation)	Total Electricity Generation (MUs) as given at CEA Website*
	Through Traders and PXs**	Direct	IEX	PXI		
01-Jul-11	148.83	58.81	37.01	2.02	89.84	2370.46
02-Jul-11	145.73	47.52	44.85	1.93	83.81	2353.18
03-Jul-11	140.44	46.57	34.46	1.54	90.14	2313.04
04-Jul-11	150.66	48.87	29.46	1.99	84.97	2380.44
05-Jul-11	151.77	46.04	33.99	4.07	78.89	2464.11
06-Jul-11	151.47	53.11	37.12	3.91	86.01	2452.59
07-Jul-11	147.44	53.11	41.63	5.27	85.78	2427.37
08-Jul-11	147.71	46.04	40.88	8.13	77.66	2388.14
09-Jul-11	157.23	46.87	36.99	4.31	79.66	2368.49
10-Jul-11	154.83	49.83	43.41	3.75	85.21	2425.08
11-Jul-11	155.36	48.40	46.85	6.40	82.38	2345.16
12-Jul-11	152.00	45.29	43.53	8.59	74.73	2373.66
13-Jul-11	153.82	44.31	38.35	7.03	79.25	2384.98
14-Jul-11	156.24	53.40	41.48	10.41	72.13	2376.87
15-Jul-11	158.68	51.26	36.43	7.69	83.22	2344.95
16-Jul-11	151.42	51.63	35.92	5.19	76.30	2321.01
17-Jul-11	159.38	48.86	31.32	1.81	76.46	2315.93
18-Jul-11	158.99	51.19	35.59	5.17	75.04	2349.15
19-Jul-11	156.11	51.38	36.64	3.91	75.00	2371.48
20-Jul-11	157.92	51.61	33.99	4.91	69.15	2363.86
21-Jul-11	158.28	50.89	33.75	5.64	69.06	2367.28
22-Jul-11	158.39	51.25	36.87	5.40	66.06	2376.82
23-Jul-11	156.39	51.39	34.39	6.05	69.64	2382.76
24-Jul-11	159.92	48.89	28.63	1.81	76.58	2386.02
25-Jul-11	156.99	52.46	33.30	3.59	68.43	2450.70
26-Jul-11	145.08	52.94	28.36	2.61	72.67	2459.08
27-Jul-11	148.87	53.06	31.23	4.16	80.48	2490.77
28-Jul-11	150.74	51.92	34.34	5.12	79.92	2447.92
29-Jul-11	150.23	51.93	34.05	6.55	71.74	2429.94
30-Jul-11	156.22	51.93	31.96	2.44	74.03	2448.78
31-Jul-11	155.63	49.56	27.65	4.79	77.95	2373.73
Total	**4752.78**	**1560.37**	**1114.43**	**146.19**	**2412.18**	**74103.75**
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: July 2011												
Market Segment	**Day ahead market of IEX**			**Day ahead market of PXIL**			**Under Drawl/Over Drawl from the Grid (UI)**					
							NEW Grid			**SR Grid**		
Date	**Mini-mum ACP**	**Maxi-mum ACP**	**Weighted Average Price***	**Mini-mum ACP**	**Maxi-mum ACP**	**Weighted Average Price***	**Mini-mum Price**	**Maxi-mum Price**	**Ave-rage Price****	**Mini-mum Price**	**Maxi-mum Price**	**Ave-rage Price****
01-Jul-11	1.60	5.75	2.28	1.00	7.25	3.31	0.93	12.22	3.29	1.86	8.26	4.62
02-Jul-11	1.80	4.40	2.69	1.20	3.50	1.89	2.02	12.22	4.92	0.47	7.79	4.18
03-Jul-11	1.95	4.11	2.79	1.99	4.11	3.01	0.00	7.79	2.48	0.31	6.85	3.06
04-Jul-11	2.50	6.00	3.64	2.51	5.00	3.91	0.93	17.46	5.56	1.40	7.32	3.22
05-Jul-11	2.75	6.51	4.03	2.75	5.50	4.10	1.71	12.22	4.51	0.62	7.32	3.03
06-Jul-11	3.00	7.25	4.35	3.25	6.55	4.41	1.40	12.22	3.85	0.16	4.50	2.65
07-Jul-11	2.30	7.30	4.20	3.25	7.30	4.70	0.31	5.44	2.63	0.62	7.79	3.86
08-Jul-11	2.70	6.50	3.88	2.30	6.50	3.77	0.00	4.03	1.89	1.55	12.22	4.15
09-Jul-11	2.09	5.00	3.05	2.29	4.75	3.45	0.00	4.50	1.63	1.86	12.22	5.55
10-Jul-11	2.00	3.30	2.32	1.98	2.75	2.30	0.47	12.22	2.41	1.09	12.22	4.78
11-Jul-11	1.98	5.00	2.65	2.00	3.20	2.43	1.55	17.46	5.35	1.09	12.22	4.76
12-Jul-11	2.00	5.60	2.83	2.00	5.60	2.91	1.09	12.22	5.29	0.78	8.26	4.20
13-Jul-11	2.00	5.60	3.08	2.00	5.60	3.16	0.31	12.22	3.63	0.93	8.26	3.30
14-Jul-11	2.50	6.25	3.33	2.20	5.75	3.14	0.78	12.22	4.05	0.47	7.79	2.97
15-Jul-11	2.30	5.80	2.99	2.29	9.00	3.58	0.00	12.22	3.51	0.62	12.22	4.11
16-Jul-11	2.00	7.50	2.75	2.10	7.00	3.16	1.24	12.22	3.96	0.00	7.32	3.58
17-Jul-11	1.70	6.00	2.25	1.95	6.30	2.52	0.00	5.44	2.26	0.00	5.91	1.79
18-Jul-11	1.99	6.20	2.67	1.50	5.75	3.11	0.62	5.44	2.29	0.00	6.38	2.67
19-Jul-11	1.85	7.08	2.51	2.00	8.00	3.07	0.62	12.22	3.29	0.78	7.32	3.59
20-Jul-11	1.84	8.00	2.61	2.00	8.00	2.78	1.09	7.79	2.48	0.47	7.32	3.82
21-Jul-11	1.96	5.00	2.65	1.95	5.00	2.87	1.09	8.26	2.66	1.09	8.26	3.93
22-Jul-11	1.98	5.00	2.63	2.00	5.00	2.79	0.31	12.22	3.30	1.09	7.32	3.15
23-Jul-11	1.89	8.00	2.52	2.00	5.75	2.80	0.93	5.91	2.93	0.78	6.85	2.72
24-Jul-11	1.70	5.00	2.23	1.99	3.80	2.59	0.00	12.22	2.78	0.93	6.85	2.92
25-Jul-11	1.88	5.00	2.38	1.50	5.00	2.71	1.86	12.22	6.03	0.93	8.26	3.64
26-Jul-11	2.00	8.50	2.81	2.00	5.25	2.91	2.48	12.22	6.17	0.93	5.44	2.84
27-Jul-11	2.50	9.00	3.31	2.50	10.00	3.38	1.71	12.22	4.82	0.16	4.97	2.46
28-Jul-11	3.00	7.00	3.83	2.90	6.10	4.02	0.93	12.22	3.17	0.78	5.91	2.59
29-Jul-11	2.60	8.00	3.25	2.61	6.10	3.61	0.31	6.85	3.01	0.47	6.38	2.74
30-Jul-11	2.06	8.50	2.86	2.09	6.30	3.12	0.62	6.85	3.16	0.47	6.85	2.75
31-Jul-11	1.75	9.00	2.44	2.00	9.25	2.76	0.31	7.32	2.68	0.47	3.88	2.47
	1.60#	**9.00#**	**2.97**	**1.00#**	**10.00#**	**3.22**	**0.00#**	**17.46#**	**3.55**	**0.00#**	**12.22#**	**3.42**
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 represents 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: July 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	2.99	1379.24	1376.24	25.93	306.51	280.58	111.39	92.99	-18.40	1638.43
Haryana	2.75	834.31	831.56	93.49	53.54	-39.95	127.18	54.26	-72.92	718.70
Rajasthan	512.77	5.27	-507.50	30.89	260.57	229.68	14.29	425.81	411.52	133.71
Delhi	12.53	585.21	572.68	264.85	3.74	-261.10	284.22	7.41	-276.82	34.76
Uttar Pradesh	68.60	1401.30	1332.71	0.00	14.96	14.96	109.52	203.18	93.67	1441.33
Uttarakhand	95.21	0.00	-95.21	7.73	0.53	-7.20	37.68	33.74	-3.93	-106.35
Himachal Pradesh	761.89	15.76	-746.13	37.56	0.00	-37.56	18.76	44.80	26.05	-757.64
J & K	407.36	0.68	-406.69	10.46	0.00	-10.46	57.35	31.94	-25.41	-442.55
UT Chandigarh	0.00	47.62	47.62	15.84	0.00	-15.84	16.62	1.08	-15.55	16.23
MP	291.88	74.40	-217.48	62.62	18.05	-44.58	210.50	15.08	-195.42	-457.47
Maharashtra	3.10	180.88	177.78	127.96	50.76	-77.20	133.69	93.08	-40.61	59.97
Gujarat	910.89	4.84	-906.05	196.58	99.05	-97.53	164.87	111.72	-53.15	-1056.73
Chattisgarh	278.20	63.21	-214.98	42.63	0.00	-42.63	5.22	282.03	276.81	19.20
Daman and Diu	0.00	0.00	0.00	0.00	0.00	0.00	20.93	5.45	-15.48	-15.48
Dadra & Nagar Haveli	0.00	0.00	0.00	0.00	18.52	18.52	22.68	12.32	-10.36	8.16
Andhra Pradesh	137.86	507.50	369.64	37.06	93.29	56.23	51.44	108.03	56.59	482.46
Karnataka	328.61	43.58	-285.03	13.57	66.64	53.08	41.81	42.74	0.93	-231.02
Kerala	72.50	202.06	129.56	0.00	49.00	49.00	2.18	67.41	65.22	243.78
Tamilnadu	245.54	771.10	525.56	0.00	150.58	150.58	84.53	52.63	-31.89	644.25
Pondicherry	0.00	0.00	0.00	0.00	0.00	0.00	19.14	1.85	-17.29	-17.29
West Bengal	156.32	83.18	-73.15	10.89	54.89	44.00	18.63	154.57	135.93	106.78
Orissa	32.16	0.00	-32.16	21.01	0.00	-21.01	90.93	19.24	-71.69	-124.86
Bihar	0.00	0.00	0.00	0.00	0.00	0.00	49.31	14.46	-34.85	-34.85
Jharkhand	0.00	74.40	74.40	0.00	10.25	10.25	48.85	15.90	-32.95	51.70
Sikkim	49.20	8.09	-41.11	23.39	0.00	-23.39	2.33	5.17	2.84	-61.66
DVC	98.99	0.00	-98.99	0.20	0.00	-0.20	21.31	74.49	53.18	-46.01
Arunachal Pradesh	5.28	0.00	-5.28	1.86	0.00	-1.86	12.92	5.84	-7.07	-14.21
Assam	0.00	0.00	0.00	34.08	9.58	-24.50	24.76	16.80	-7.96	-32.46
Manipur	0.00	0.00	0.00	0.00	0.00	0.00	31.20	0.01	-31.19	-31.19
Meghalaya	7.00	0.00	-7.00	3.47	0.00	-3.47	15.10	1.01	-14.10	-24.57
Mizoram	0.00	0.00	0.00	8.27	0.00	-8.27	5.00	0.98	-4.02	-12.29
Nagaland	13.45	0.00	-13.45	0.00	0.00	0.00	9.11	2.64	-6.47	-19.92
Tripura	17.98	3.00	-14.97	13.46	0.15	-13.31	6.13	3.23	-2.90	-31.19
GOA	0.00	27.53	27.53	36.36	0.00	-36.36	47.22	2.98	-44.24	-53.07
JINDAL POWER	619.07	0.00	-619.07	12.30	0.00	-12.30	1.49	18.24	16.76	-614.61
LANKO_AMK	229.82	0.00	-229.82	19.32	0.00	-19.32	12.71	22.96	10.25	-238.88
LANKO_KONDAPALLY	214.25	0.00	-214.25	1.34	0.00	-7.33	2.25	7.17	4.92	-216.66
STERLITE	304.79	0.00	-304.79	16.07	0.00	-16.07	19.58	23.24	3.67	-317.20
AD HYDRO	74.08	0.00	-74.08	25.73	0.00	-25.73	3.23	5.53	2.30	-97.51
KARCHAM WANGTOO	370.06	0.00	-370.06	59.04	0.00	-59.04	26.86	6.66	-20.20	-449.30
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), JULY 2011				
Sr.No	**Short-term transactions**	**Volume (MUs)**	**% to Volume of short-term transactions**	**% to Total Generation**
1	Bilateral	6313.15	63.22%	8.52%
	(i) Through Traders and PXs	*4752.78*	47.59%	6.41%
	(ii) Direct	*1560.37*	15.63%	2.11%
2	Through Power Exchanges	1260.62	12.62%	1.70%
	IEX	*1114.43*	11.16%	1.50%
	PXIL	*146.19*	1.46%	0.20%
3	Through UI	2412.18	24.16%	3.26%
	Total	**9985.95**	100.00%	13.48%
	Total Generation	**74103.75**	–	–
Source: NLDC				





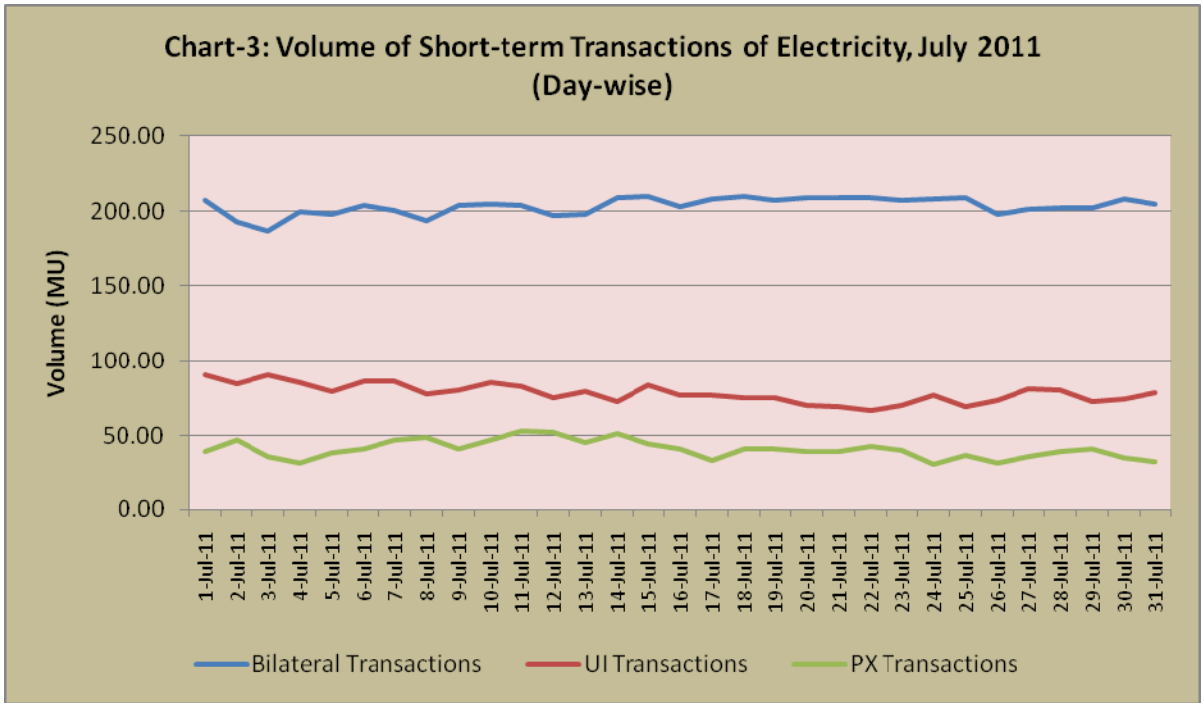


Chart-3: Volume of Short-term Transactions of Electricity, July 2011
(Day-wise)
Volume (MU)
250.00
200.00
150.00
100.00
50.00
0.00
1-Jul-11
2-Jul-11
3-Jul-11
4-Jul-11
5-Jul-11
6-Jul-11
7-Jul-11
8-Jul-11
9-Jul-11
10-Jul-11
11-Jul-11
12-Jul-11
13-Jul-11
14-Jul-11
15-Jul-11
16-Jul-11
17-Jul-11
18-Jul-11
19-Jul-11
20-Jul-11
21-Jul-11
22-Jul-11
23-Jul-11
24-Jul-11
25-Jul-11
26-Jul-11
27-Jul-11
28-Jul-11
29-Jul-11
30-Jul-11
31-Jul-11
Bilateral Transactions
UI Transactions
PX Transactions

Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, JULY 2011			
Sr.No	**Name of the Trading Licensee**	**% Share in total Volume transacted by Trading Licensees**	**Herfindahl-Hirschman Index**
1	PTC India Ltd	32.69%	0.1068
2	NTPC Vidyut Vyapar Nigam Ltd	14.91%	0.0222
3	Tata Power Trading Company (P) Ltd	10.96%	0.0120
4	Reliance Energy Trading (P) Ltd	8.42%	0.0071
5	Adani Enterprises Ltd	7.03%	0.0049
6	National Energy Trading & Services Ltd	6.95%	0.0048
7	JSW Power Trading Company Ltd	6.47%	0.0042
8	GMR Energy Trading Ltd	4.49%	0.0020
9	Knowledge Infrastructure Systems (P) Ltd	3.30%	0.0011
10	Instinct Infra & Power Ltd	2.09%	0.0004
11	Shree Cement Ltd.	1.71%	0.0003
12	RPG Power Trading Company Ltd.	0.30%	0.0000
13	Global Energy (P) Ltd.	0.27%	0.0000
14	Jaipraksah Associates Limited	0.26%	0.0000
15	Mittal Processor (P) Ltd.	0.17%	0.0000
	Total	**100.00%**	**0.1660**
	Top 5 trading licensees	**74.00%**	
Note: Volume of electricity transacted by trading licensees includes bilateral transactions (inter-state) and the transactions undertaken through power exchanges.			
Source: Information submitted by trading licensees			

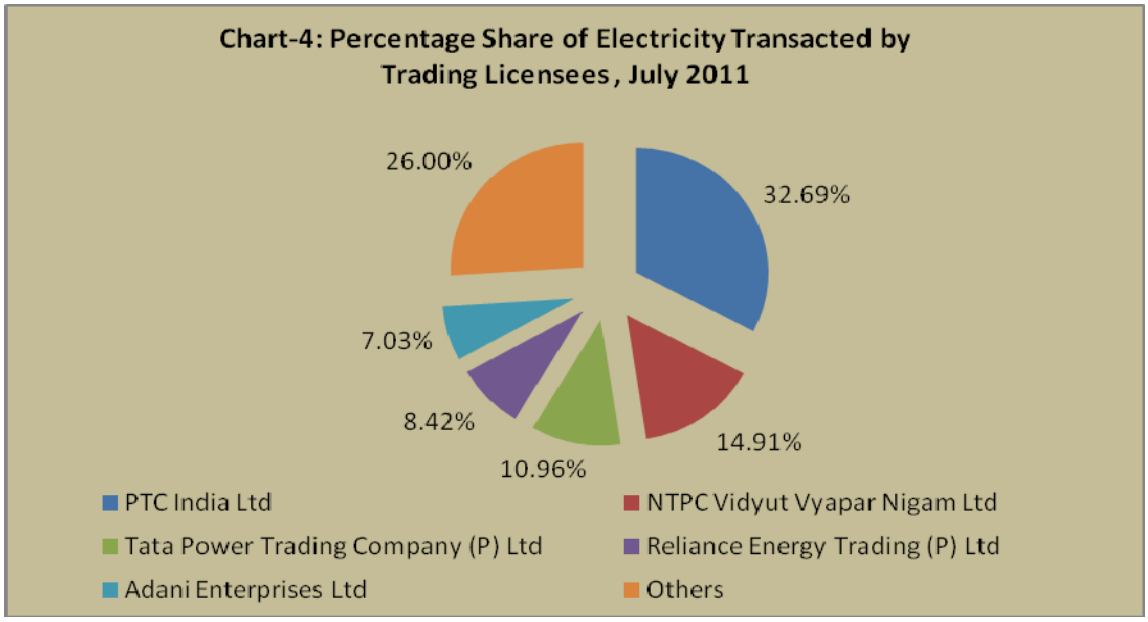


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, JULY 2011		
Sr.No		**Sale Price of Traders (₹/kWh)**
1	Minimum	2.34
2	Maximum	6.57
3	Weighted Average	3.90

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (Time-wise), JULY 2011		
Sr.No	**Period of Trade**	**Sale Price of Traders (₹/kWh)**
1	RTC	3.90
2	PEAK	3.95
3	OFF PEAK	3.70

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGE, JULY 2011			
Sr.No	**ACP**	**Price in IEX (₹/kWh)**	**Price in PXIL (₹/kWh)**
1	Minimum	1.60	1.00
2	Maximum	9.00	10.00
3	Weighted Average	2.97	3.22

Source: Information submitted by IEX and PXIL

Table-6: Volume and Price of Electricity in Term Ahead Market of IEX, July 2011			
Sr.No	**Term ahead contracts**	**Actual Scheduled Volume (MUs)**	**Weighted Average Price (₹/kwh)**
1	Intra Day Contracts	2.38	3.91
2	Day Ahead Contingency Contracts	0.77	3.00
3	Weekly Contracts	11.04	5.37
	Total	**14.19**	

Source: IEX

Table-7: Volume and Price of Electricity in Term Ahead Market of PXIL, July 2011			
Sr.No	**Term ahead contracts**	**Actual Scheduled Volume (MUs)**	**Weighted Average Price (₹/kwh)**
1	Day Ahead Contingency Contracts	0.93	4.07
2	Weekly Contracts	13.15	3.84
	Total	**14.08**	

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH UI, JULY 2011			
Sr.No		**Price in NEW Grid (₹/kWh)**	**Price in SR Grid (₹/kWh)**
1	Minimum	0.00	0.00
2	Maximum	17.46	12.22
3	Average	3.55	3.42

Source: NLDC

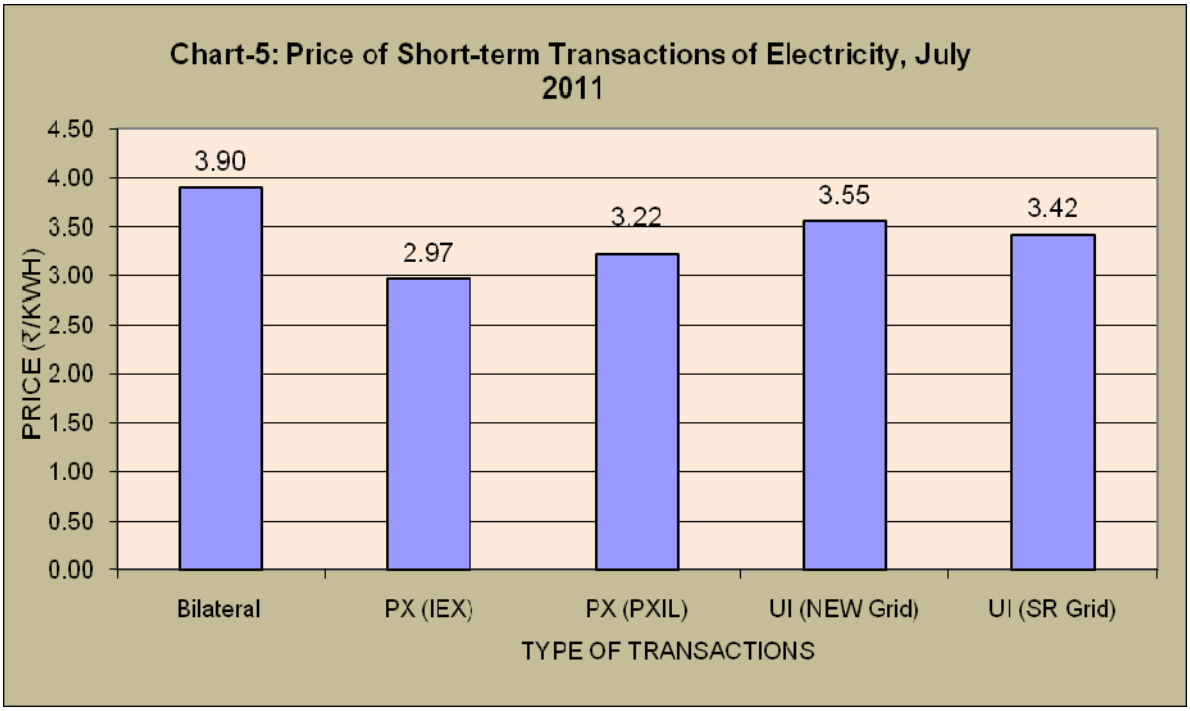


Chart-5: Price of Short-term Transactions of Electricity, July 2011
PRICE (₹/KWH)
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
3.90
2.97
3.22
3.55
3.42
Bilateral
PX (IEX)
PX (PXIL)
UI (NEW Grid)
UI (SR Grid)
TYPE OF TRANSACTIONS

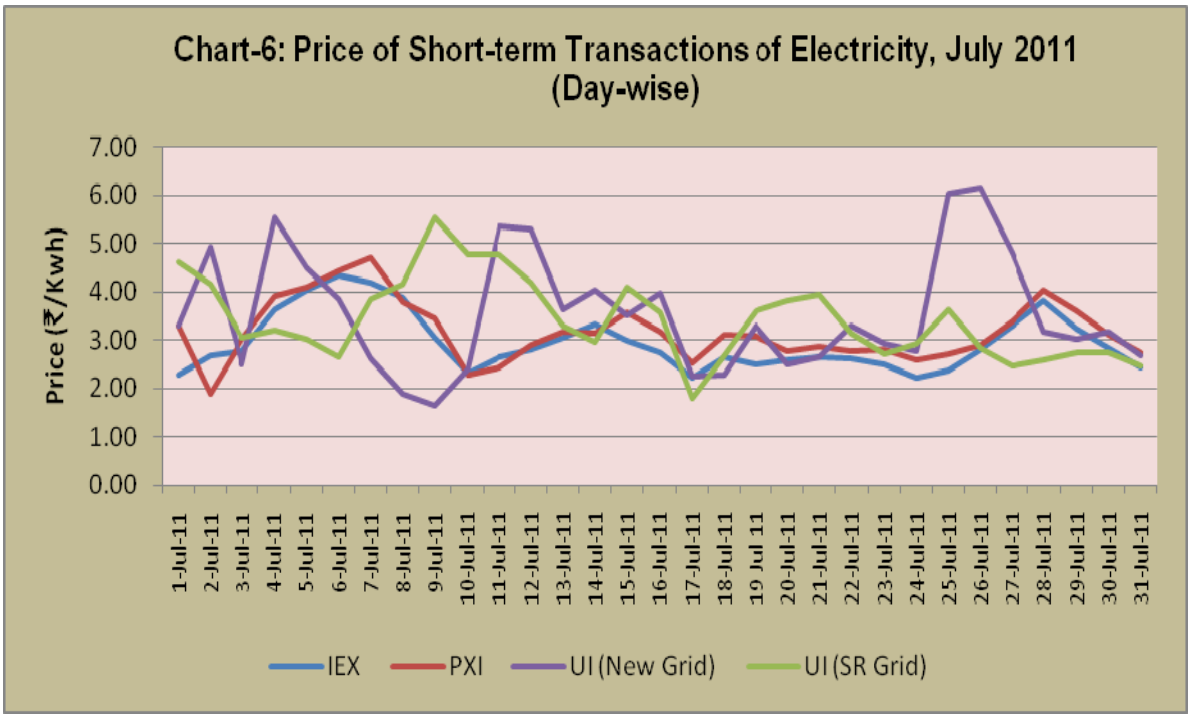


Chart-6: Price of Short-term Transactions of Electricity, July 2011 (Day-wise)
Price (₹/Kwh)
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
1-Jul-11
2-Jul-11
3-Jul-11
4-Jul-11
5-Jul-11
6-Jul-11
7-Jul-11
8-Jul-11
9-Jul-11
10-Jul-11
11-Jul-11
12-Jul-11
13-Jul-11
14-Jul-11
15-Jul-11
16-Jul-11
17-Jul-11
18-Jul-11
19 Jul 11
20-Jul-11
21-Jul-11
22-Jul-11
23-Jul-11
24-Jul-11
25-Jul-11
26-Jul-11
27-Jul-11
28-Jul-11
29-Jul-11
30-Jul-11
31-Jul-11
IEX
PXI
UI (New Grid)
UI (SR Grid)

Table-9: VOLUME OF ELECTRICITY SALE THROUGH BILATERAL, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Sale (MUs)**	**% of Volume**
Gujarat	910.89	14.40%
Himachal Pradesh	761.89	12.05%
JINDAL POWER	619.07	9.79%
Rajasthan	512.77	8.11%
J & K	407.36	6.44%
KARCHAM WANGTOO	370.06	5.85%
Karnataka	328.61	5.20%
STERLITE	304.79	4.82%
MP	291.88	4.61%
Chattisgarh	278.20	4.40%
Tamilnadu	245.54	3.88%
LANKO_AMK	229.82	3.63%
LANKO_KONDAPALLY	214.25	3.39%
West Bengal	156.32	2.47%
Andhra Pradesh	137.86	2.18%
DVC	98.99	1.56%
Uttarakhand	95.21	1.51%
AD HYDRO	74.08	1.17%
Kerala	72.50	1.15%
Uttar Pradesh	68.60	1.08%
Sikkim	49.20	0.78%
Orissa	32.16	0.51%
Tripura	17.98	0.28%
Nagaland	13.45	0.21%
Delhi	12.53	0.20%
Meghalaya	7.00	0.11%
Arunachal Pradesh	5.28	0.08%
Maharashtra	3.10	0.05%
Punjab	2.99	0.05%
Haryana	2.75	0.04%
Total	**6325.11**	**100.00%**
Volume of sale by top 5 States	**3211.98**	**50.78%**

Table-10: VOLUME OF ELECTRICITY PURCHASE THROUGH BILATERAL, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Purchase (MUs)**	**% of Volume**
Uttar Pradesh	1401.30	22.20%
Punjab	1379.24	21.85%
Haryana	834.31	13.22%
Tamilnadu	771.10	12.21%
Delhi	585.21	9.27%
Andhra Pradesh	507.50	8.04%
Kerala	202.06	3.20%
Maharashtra	180.88	2.87%
West Bengal	83.18	1.32%
MP	74.40	1.18%
Jharkhand	74.40	1.18%
Chattisgarh	63.21	1.00%
UT Chandigarh	47.62	0.75%
Karnataka	43.58	0.69%
GOA	27.53	0.44%
Himachal Pradesh	15.76	0.25%
Sikkim	8.09	0.13%
Rajasthan	5.27	0.08%
Gujarat	4.84	0.08%
Tripura	3.00	0.05%
J & K	0.68	0.01%
Total	**6313.15**	**100.00%**
Volume of purchase by top 5 States	**4971.16**	**78.74%**

Table-11: VOLUME OF ELECTRICITY SALE THROUGH POWER EXCHANGE, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Sale (MUs)**	**% of Volume**
Delhi	264.85	21.12%
Gujarat	196.58	15.68%
Maharashtra	127.96	10.20%
Haryana	93.49	7.46%
MP	62.62	4.99%
KARCHAM WANGTOO	59.04	4.71%
Chattisgarh	42.63	3.40%
Himachal Pradesh	37.56	3.00%
Andhra Pradesh	37.06	2.96%
GOA	36.36	2.90%
Assam	34.08	2.72%
Rajasthan	30.89	2.46%
Punjab	25.93	2.07%
AD HYDRO	25.73	2.05%
Sikkim	23.39	1.87%
Orissa	21.01	1.68%
LANKO_AMK	19.32	1.54%
STERLITE	16.07	1.28%
UT Chandigarh	15.84	1.26%
Karnataka	13.57	1.08%
Tripura	13.46	1.07%
JINDAL POWER	12.30	0.98%
West Bengal	10.89	0.87%
J & K	10.46	0.83%
Mizoram	8.27	0.66%
Uttarakhand	7.73	0.62%
Meghalaya	3.47	0.28%
Arunachal Pradesh	1.86	0.15%
LANKO_KONDAPALLY	1.34	0.11%
DVC	0.20	0.02%
Total	**1253.96**	**100.00%**
Volume of purchase by top 5 States	**745.50**	**59.45%**

Table-12: VOLUME OF ELECTRICITY PURCHASE THROUGH POWER EXCHANGE, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Purchase (MUs)**	**% of Volume**
Punjab	306.51	24.31%
Rajasthan	260.57	20.67%
Tamilnadu	150.58	11.94%
Gujarat	99.05	7.86%
Andhra Pradesh	93.29	7.40%
Karnataka	66.64	5.29%
West Bengal	54.89	4.35%
Haryana	53.54	4.25%
Maharashtra	50.76	4.03%
Kerala	49.00	3.89%
Dadra & Nagar Haveli	18.52	1.47%
MP	18.05	1.43%
Uttar Pradesh	14.96	1.19%
Jharkhand	10.25	0.81%
Assam	9.58	0.76%
Delhi	3.74	0.30%
Uttarakhand	0.53	0.04%
Tripura	0.15	0.01%
Total	**1260.62**	**100.00%**
Volume of sale by top 5 States	**910.01**	**72.19%**

Table-13: VOLUME OF ELECTRICITY EXPORT THROUGH UI, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Export (MUs)**	**% of Volume**
Delhi	284.22	14.33%
MP	210.50	10.62%
Gujarat	164.87	8.31%
Maharashtra	133.69	6.74%
Haryana	127.18	6.41%
Punjab	111.39	5.62%
Uttar Pradesh	109.52	5.52%
Orissa	90.93	4.59%
Tamilnadu	84.53	4.26%
J & K	57.35	2.89%
Andhra Pradesh	51.44	2.59%
Bihar	49.31	2.49%
Jharkhand	48.85	2.46%
GOA	47.22	2.38%
Karnataka	41.81	2.11%
Uttarakhand	37.68	1.90%
Manipur	31.20	1.57%
KARCHAM WANGTOO	26.86	1.35%
Assam	24.76	1.25%
Dadra & Nagar Haveli	22.68	1.14%
DVC	21.31	1.07%
Daman and Diu	20.93	1.06%
STERLITE	19.58	0.99%
Pondicherry	19.14	0.97%
Himachal Pradesh	18.76	0.95%
West Bengal	18.63	0.94%
UT Chandigarh	16.62	0.84%
Meghalaya	15.10	0.76%
Rajasthan	14.29	0.72%
Arunachal Pradesh	12.92	0.65%
LANKO_AMK	12.71	0.64%
Nagaland	9.11	0.46%
Tripura	6.13	0.31%
Chattisgarh	5.22	0.26%
Mizoram	5.00	0.25%
AD HYDRO	3.23	0.16%
Sikkim	2.33	0.12%
LANKO_KONDAPALLY	2.25	0.11%
Kerala	2.18	0.11%
JINDAL POWER	1.49	0.07%
Total	**1982.94**	**100.00%**
Volume of Export by top 5 States	**920.47**	**46.42%**

Table-14: VOLUME OF ELECTRICITY IMPORT THROUGH UI, JULY 2011		
Name of the State/UT/Other Regional Entity	**Volume of Import (MUs)**	**% of Volume**
Rajasthan	425.81	20.39%
Chattisgarh	282.03	13.50%
Uttar Pradesh	203.18	9.73%
West Bengal	154.57	7.40%
Gujarat	111.72	5.35%
Andhra Pradesh	108.03	5.17%
Maharashtra	93.08	4.46%
Punjab	92.99	4.45%
DVC	74.49	3.57%
Kerala	67.41	3.23%
Haryana	54.26	2.60%
Tamilnadu	52.63	2.52%
Himachal Pradesh	44.80	2.14%
Karnataka	42.74	2.05%
Uttarakhand	33.74	1.62%
J & K	31.94	1.53%
STERLITE	23.24	1.11%
LANKO_AMK	22.96	1.10%
Orissa	19.24	0.92%
JINDAL POWER	18.24	0.87%
Assam	16.80	0.80%
Jharkhand	15.90	0.76%
MP	15.08	0.72%
Bihar	14.46	0.69%
Dadra & Nagar Haveli	12.32	0.59%
Delhi	7.41	0.35%
LANKO_KONDAPALLY	7.17	0.34%
KARCHAM WANGTOO	6.66	0.32%
Arunachal Pradesh	5.84	0.28%
AD HYDRO	5.53	0.26%
Daman and Diu	5.45	0.26%
Sikkim	5.17	0.25%
Tripura	3.23	0.15%
GOA	2.98	0.14%
Nagaland	2.64	0.13%
Pondicherry	1.85	0.09%
UT Chandigarh	1.08	0.05%
Meghalaya	1.01	0.05%
Mizoram	0.98	0.05%
Manipur	0.01	0.00%
Total	**2088.70**	**100.00%**
Volume of Export by top 5 States	**1177.31**	**56.37%**

Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), JULY 2011		
Sr.No	**Name of the State/UT/Other Regional Entity**	**Total volume of net short-term transactions of electricity***
1	Punjab	1638.43
2	Uttar Pradesh	1441.33
3	Haryana	718.70
4	Tamilnadu	644.25
5	Andhra Pradesh	482.46
6	Kerala	243.78
7	Rajasthan	133.71
8	West Bengal	106.78
9	Maharashtra	59.97
10	Jharkhand	51.70
11	Delhi	34.76
12	Chattisgarh	19.20
13	UT Chandigarh	16.23
14	Dadra & Nagar Haveli	8.16
15	Mizoram	-12.29
16	Arunachal Pradesh	-14.21
17	Daman and Diu	-15.48
18	Pondicherry	-17.29
19	Nagaland	-19.92
20	Meghalaya	-24.57
21	Tripura	-31.19
22	Manipur	-31.19
23	Assam	-32.46
24	Bihar	-34.85
25	DVC	-46.01
26	GOA	-53.07
27	Sikkim	-61.66
28	AD HYDRO	-97.51
29	Uttarakhand	-106.35
30	Orissa	-124.86
31	LANKO_KONDAPALLY	-216.66
32	Karnataka	-231.02
33	LANKO_AMK	-238.88
34	STERLITE	-317.20
35	J & K	-442.55
36	KARCHAM WANGTOO	-449.30
37	MP	-457.47
38	JINDAL POWER	-614.61
39	Himachal Pradesh	-757.64
40	Gujarat	-1056.73
** 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, JULY 2011			
	Details of Congestion	**IEX**	**PXIL**
A	Unconstrained Cleared Volume* (MU)	1158.97	158.75
B	Actual Cleared Volume and hence scheduled (MU)	1114.43	146.19
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MU) (A-B)	44.54	12.56
D	Volume of electricity that could not be cleared as % to Actual Cleared Volume	4%	9%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	42%	44%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	17%	16%
	6.00 - 12.00 hours	30%	30%
	12.00 - 18.00 hours	25%	26%
	18.00 - 24.00 hours	28%	28%
** This power would have been scheduled had there been no congestion.*			