

Monthly Report on Short-term Transactions of Electricity in India

September, 2016



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Contents

S.No.	Contents	Page No
	Contents	i
	List of Tables and Figures	ii
	Abbreviations	iii
	Introduction	1
I	Volume of Short-term Transactions of Electricity	1
II	Price of Short-term Transactions of Electricity	2
(i)	<i>Price of electricity transacted through Traders</i>	2
(ii)	<i>Price of electricity transacted through Power Exchanges</i>	3
(iii)	<i>Price of electricity transacted through DSM</i>	3
III	Volume of Short-term Transactions of Electricity (Regional Entity-wise)	3
IV	Congestion on Inter-State Transmission Corridor for Day-Ahead Market on Power Exchanges	4
V	Bilateral Contracts executed by Traders	5
(i)	<i>Duration of bilateral contracts</i>	5
(ii)	<i>Forward Curve based on Price of bilateral contracts</i>	5
VI	Volume and Price of Renewable Energy Certificates (RECs)	6
VII	Inferences	7

List of Tables and Figures

S.No.	List of Tables and Figures	Page No.
I List of Tables		
Table-1	Volume of Short-term Transactions of Electricity in India	9
Table-2	Percentage Share of Electricity Transacted by Trading Licensees	11
Table-3	Price of Electricity Transacted through Traders	12
Table-4	Price of Electricity Transacted through Traders (Time-wise)	12
Table-5	Price of Electricity Transacted through Power Exchanges	12
Table-6	Volume and Price of Electricity in Term Ahead Market of IEX	12
Table-7	Volume and Price of Electricity in Term Ahead Market of PXIL	12
Table-8	Price of Electricity Transacted through DSM	12
Table-9	Volume of Electricity Sold through Bilateral	14
Table-10	Volume of Electricity Purchased through Bilateral	15
Table-11	Volume of Electricity Sold through Power Exchanges	16
Table-12	Volume of Electricity Purchased through Power Exchanges	18
Table-13	Volume of Electricity Under drawal through DSM	19
Table-14	Volume of Electricity Over drawal through DSM	21
Table-15	Total Volume of Net Short-term Transactions of Electricity (Regional Entity-wise)	23
Table-16	Details of Congestion in Power Exchanges	25
Table-17	Volume of Short-term Transactions of Electricity in India (Day-wise)	26
Table-18	Price of Electricity in Short-term Transactions (Day-wise)	27
Table-19	Volume of Short-term Transactions of Electricity (Regional Entity-wise)	28
Table-20	Volume and Price of Renewable Energy Certificates (RECs) Transacted through Power Exchanges	32
II List of Figures		
Figure-1	Volume of Short-term Transactions of Electricity	9
Figure-2	Volume of Various Kinds of Electricity Transactions in Total Electricity Generation	9
Figure-3	Volume of Short-term Transactions of Electricity (Day-wise)	10
Figure-4	Percentage Share of Electricity Transacted by Trading Licensees	11
Figure-5	Price of Electricity in Short-term Transactions	13
Figure-6	Price of Electricity in Short-term Transactions (Day-wise)	13
Figure-7	Bilateral Contracts Executed by Traders in October, 2016	31
Figure-8	Forward Curve based on Prices of Bilateral Contracts	31

Abbreviations

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

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

Introduction

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

I: Volume of Short-term Transactions of Electricity

During September 2016, total electricity generation excluding generation from renewable and captive power plants in India was 97822.38 MUs (Table-1).

Of the total electricity generation, 11311.76 MUs (11.56 %) was transacted through short-term, comprising of 5817.11 MUs (5.95%) through bilateral (through traders and term-ahead contracts on power exchanges and directly between distribution companies), followed by 3651.91 MUs (3.73%) through day ahead collective transactions on power exchanges (IEX and PXIL) and 1842.73 MUs (1.88%) through DSM (Table-1 & Figure-2).

Of the total short-term transactions, bilateral constitutes 51.43% (33.18% through traders and term-ahead contracts on power exchanges and 18.25% directly between distribution companies) followed by 32.28% through day ahead collective transactions on power exchanges and 16.29% through DSM (Table-1& Figure-1). Daily volume of short-term transactions is shown in Table-17 & Figure-3.

The percentage share of electricity traded by each trading licensee in the total volume of electricity traded by all the trading licensees is provided in Table-2 & Figure-4. The volume of electricity transacted by the trading licensees includes bilateral transactions and the transactions undertaken through power exchanges. There were 36 trading licensees as on September, 2016. In September 2016, 22 trading licensees were engaged in short term trading. Top 5 trading licensees had a share of 77.46% in the total volume traded by all the licensees. These are PTC India Ltd., Manikaran Power Ltd., Mittal Processors (P) Ltd., Tata Power Trading Company (P) Ltd. and Arunachal Pradesh Power Corporation Ltd.

Herfindahl-Hirschman Index (HHI) has been used for measuring the competition among the trading licensees. Increase in the HHI generally indicates a decrease in competition and an increase of market concentration, and vice versa. The HHI below 0.15 indicates non-concentration, HHI between 0.15 and 0.25 indicates moderate concentration and HHI above 0.25 indicates high concentration. The HHI has been computed based on the volume of electricity traded (inter-State & intra-State) by inter-State trading licensees, and it was 0.1846 for the month of September 2016, which indicates moderate concentration of market power (Table-2).

The volume of electricity transacted through IEX and PXIL in the day ahead market was 3630.34 MUs and 21.57 MUs respectively. The volume of total buy bids and sell bids was 4398.32 MUs and 6277.39 MUs respectively in IEX while the same was 25.20 MUs and 48.16 MUs respectively in PXIL. The variation in the volume of buy bids and sell bids placed through power exchanges shows variation in the demand and supply position.

The volume of electricity transacted through IEX and PXIL in the term-ahead market was 28.56 MUs and 14.18 MUs respectively (Table-6 & Table-7).

II: Price of Short-term Transactions of Electricity

(i) *Price of electricity transacted through Traders:* The minimum, maximum and weighted average sale prices have been computed for the electricity transacted through traders and the sale prices were ₹0.03/kWh, ₹5.59/kWh and ₹3.35/kWh respectively (Table-

3). The weighted average sale prices were also computed for the transactions during Round the Clock (RTC), Peak and Off-peak periods separately, and the sale prices were ₹3.66/kWh, ₹2.99/kWh and ₹2.85/kWh respectively (Table-4).

(ii) *Price of electricity transacted through Power Exchanges:* The minimum, maximum and weighted average prices have been computed for the electricity transacted through IEX and PXIL separately. The minimum, maximum and weighted average prices were ₹1.10/kWh, ₹6.50/kWh and ₹2.50/kWh respectively in IEX and ₹1.43/kWh, ₹4.50/kWh and ₹ 2.39/kWh respectively in PXIL (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹3.39/kWh and ₹2.84/kWh respectively (Table-6 and Table-7).

(iii) *Price of electricity transacted through DSM:* The average deviation settlement price was ₹1.78/kWh. The minimum and maximum deviation settlement prices were ₹0.00/kWh and ₹ 7.20/kWh respectively (Table-8).

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

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

Of the total bilateral transactions, top 5 regional entities sold 33.77% of the volume, and these were Himachal Pradesh, Jammu & Kashmir, Chhattisgarh, Coastal Energen Private Ltd. and Diligent Power Private Ltd.. Top 5 regional entities purchased 57.26% of the volume, and these were Haryana, Chhattisgarh, Punjab, Telangana and Delhi (Table-9 & 10).

Of the total power exchange transactions, top 5 regional entities sold 41.25% of the volume, and these were Madhya Pradesh, Himachal Pradesh, Jindal India Thermal Power Ltd., Gujarat and Jaypee Karcham Hydro Corporation Ltd.. Top 5 regional entities purchased 46.56% of the volume, and these were Gujarat, Rajasthan, Bihar, Telangana and Haryana (Table-11 & 12).

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.

Of the total DSM transactions, top 5 regional entities underdrew 68.14% of the volume, and these were Tamil Nadu, NTPC Stations (WR), Maharashtra, Gujarat and Madhya Pradesh (Table-13). Top 5 regional entities overdrew 28.08% of the volume, and these were NTPC Stations (NR), Uttar Pradesh, NTPC Stations (WR), Maharashtra and Karnataka (Table-14).

Regional entity-wise total volume of net short-term transactions of electricity i.e. volume of net transactions through bilateral, power exchanges and DSM is shown in Table-15 & 19. Top 5 electricity selling regional entities were Himachal Pradesh, Madhya Pradesh, Jindal India Thermal Power Ltd., Diligent Power Private Ltd and Jammu & Kashmir. Top 5 electricity purchasing regional entities were Haryana, Punjab, Telangana, Bihar and Uttar Pradesh.

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

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

In the month of September, congestion occurred in both the power exchanges. The details of congestion are shown in Table-16. The volume of electricity that could not be

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.

cleared due to congestion and could not be transacted through power exchanges is the difference between unconstrained cleared volume (volume of electricity that would have been scheduled, had there been no congestion) and actual cleared volume.

During the month, the volume of electricity that could not be cleared in IEX and PXIL due to congestion was 2.30% and 0.00% of the unconstrained cleared volume respectively. In terms of time, congestion occurred was 48.58% in IEX and 9.72% in PXIL (Table-16).

V: Bilateral Contracts executed by Traders

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

(i) Duration of bilateral contracts: During October, 2016, a total of 158 bilateral contracts (excluding banking/swap contracts) have been executed by traders for the volume of 1215.37 MUs. Figure-7 shows the percentage of contracts categorized according to the period of power supply. It can be observed from the figure that 77.2% of the bilateral contracts were executed for duration of up to one week, 22.8% of the contracts were executed for duration of more than a week and up to one month, and no contracts were executed for more than one month.

During the month, 67 banking/swapping bilateral contracts were also executed for the volume of 225.21 MUs.

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

Figure-8 represents the forward curve of electricity sale prices for the period from October, 2016 to November, 2016 based on bilateral contracts⁴ executed till October, 2016.

⁴Excluding Banking/Swapping contracts

Forward curves have been drawn for the contracts executed in September, 2016 and October, 2016 for the purpose of comparison. It is observed that the forward prices for the period from 4th to 24th October, 2016 are relatively higher for the contracts executed in October, 2016 compared to the contracts executed in September, 2016.

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

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

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

The details of REC transactions for the month of September, 2016 are shown in Table-20. The market clearing volume of solar RECs transacted on IEX and PXIL were 15126 and 16598 respectively and the market clearing price of these RECs was ₹3500/MWh on both the power exchanges. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 91355 and 84170 respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

The gap between the volume of buy and sell bids of RECs placed through power exchanges shows that there was less demand for both solar and non-solar RECs. For Solar RECs, the ratio of buy bids to sell bids was 0.008 and 0.010 for IEX and PXIL respectively. For non-solar RECs, the ratio of buy bids to sell bids was 0.014 and 0.014 for IEX and PXIL respectively.

VII: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 11.56%.
- Of the total short-term transactions of electricity, 51.43% was transacted through bilateral (through traders and term ahead contracts on power exchanges and directly by distribution companies), followed by 32.28% through power exchanges and 16.29% through DSM.
- Top 5 trading licensees had a share of 77.46% in the total volume traded by all the trading licensees.
- The Herfindahl Hirschman Index computed for the volume of electricity traded by trading licensees was 0.1846, indicating moderate concentration of market power.
- The weighted average price of electricity transacted through trading licensees was ₹3.35/kWh. The weighted average prices of electricity transacted through IEX and PXIL were ₹2.50/kWh and ₹2.39/kWh respectively.
- The average price of electricity transacted through DSM was ₹1.78/kWh.
- Top 5 electricity selling regional entities were Himachal Pradesh, Madhya Pradesh, Jindal India Thermal Power Ltd., Diligent Power Private Ltd and Jammu & Kashmir. Top 5 electricity purchasing regional entities were Haryana, Punjab, Telangana, Bihar and Uttar Pradesh.
- The volume of electricity that could not be cleared in IEX and PXIL due to congestion was 2.30% and 0.00% of the unconstrained cleared volume respectively. In terms of time, congestion occurred was 48.58% in IEX and 9.72% in PXIL (Table-16).
- In October 2016, 77.2% of the bilateral contracts were executed for duration of up to one week, 22.8% of the contracts were executed for duration of more than a week and up to one month, and no contracts were executed for more than one month.

- The forward prices for the period from 4th to 24th October, 2016 are relatively higher for the contracts executed in October, 2016 compared to the contracts executed in September, 2016.
- The market clearing volume of solar RECs transacted on IEX and PXIL were 15126 and 16598 respectively and the market clearing price of these RECs was ₹3500/MWh on both the power exchanges. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 91355 and 84170 respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), SEPTEMBER 2016				
Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	5817.11	51.43	5.95
	(i) Through Traders and PXs	3752.91	33.18	3.84
	(ii) Direct	2064.20	18.25	2.11
2	Through Power Exchanges	3651.91	32.28	3.73
	(i) IEX	3630.34	32.09	3.71
	(ii) PXIL	21.57	0.19	0.02
3	Through DSM	1842.73	16.29	1.88
	Total	11311.76	-	11.56
	Total Generation	97822.38	-	-

Source: NLDC

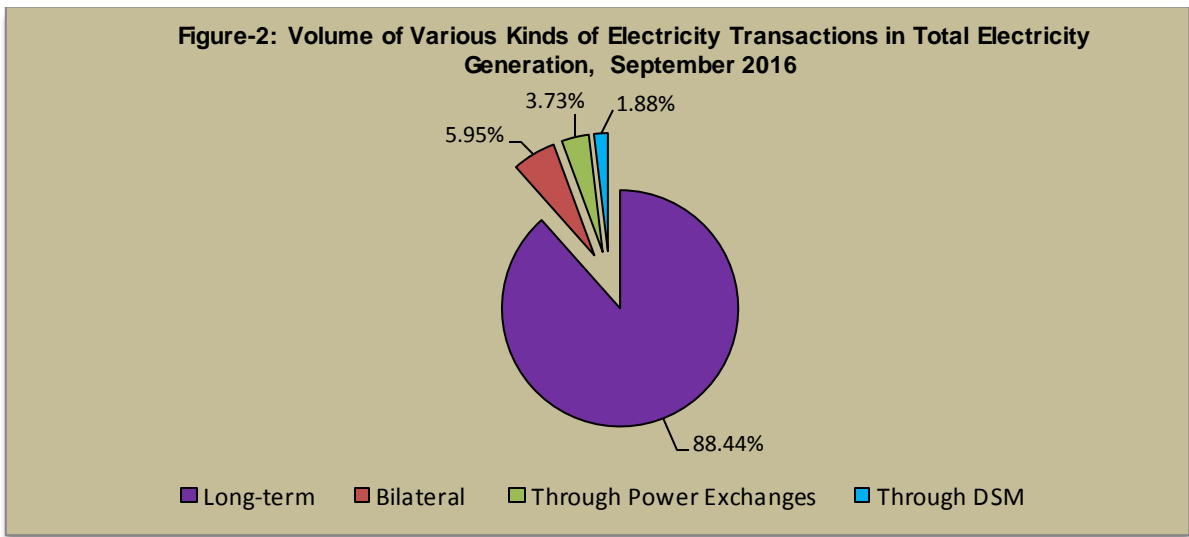
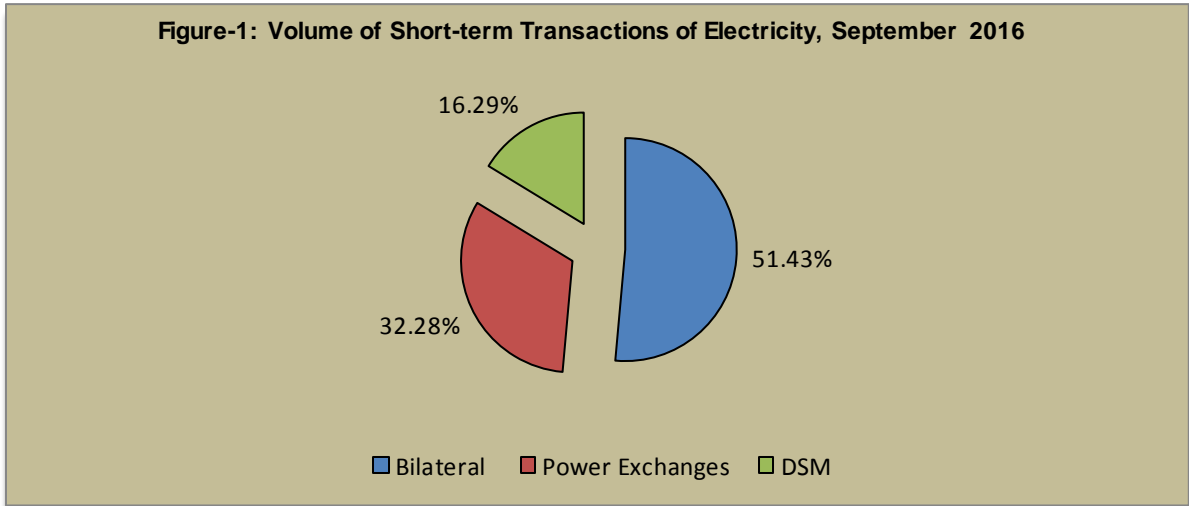


Figure-3: Volume of Short-term Transactions of Electricity, September 2016 (Day-wise)

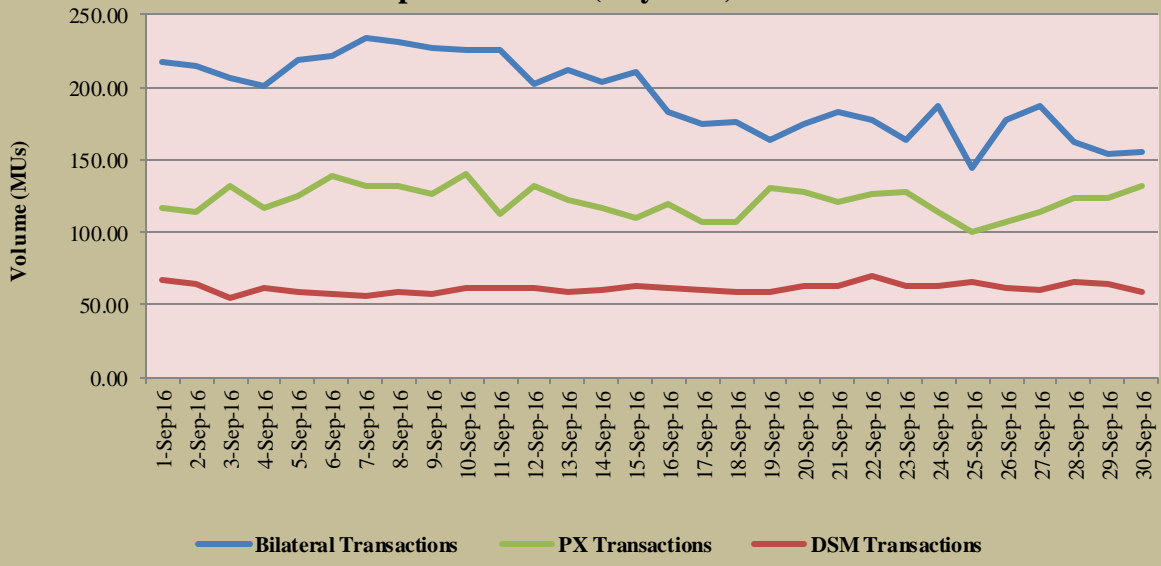


Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, SEPTEMBER 2016			
Sr.No	Name of the Trading Licensee	% Share in total Volume transacted by Trading Licensees	Herfindahl-Hirschman Index
1	PTC India Ltd.	36.17	0.1308
2	Manikaran Power Ltd.	13.37	0.0179
3	Mittal Processors (P) Ltd.	12.69	0.0161
4	Tata Power Trading Company (P) Ltd.	9.28	0.0086
5	Arunachal Pradesh Power Corporation (P) ltd	5.96	0.0036
6	Adani Enterprises Ltd.	5.62	0.0032
7	NTPC Vidyut Vyapar Nigam Ltd.	5.13	0.0026
8	GMR Energy Trading Ltd.	3.04	0.0009
9	JSW Power Trading Company Ltd	1.72	0.0003
10	Jaiprakash Associates Ltd.	1.37	0.0002
11	Knowledge Infrastructure Systems (P) Ltd	1.01	0.0001
12	RPG Power Trading Company Ltd.	1.00	0.0001
13	National Energy Trading & Services Ltd.	0.80	0.0001
14	SN Power Markets Pvt. Ltd.	0.59	0.0001
15	Instinct Infra & Power Ltd.	0.48	0.0000
16	My Home Power Private Ltd.	0.47	0.0000
17	Gita Power & Infrastructure Private Limited	0.39	0.0000
18	Shree Cement Ltd.	0.36	0.0000
19	Customized Energy Solutions India (P) Ltd.	0.26	0.0000
20	Phillip Commodities India (P) Ltd.	0.11	0.0000
21	Ambitious Power Trading Company Ltd.	0.11	0.0000
22	Essar Electric Power Development Corp. Ltd.	0.09	0.0000
TOTAL		100.00%	0.1846
Top 5 trading licensees		77.46%	
<i>Note 1: Volume of electricity transacted by the trading licensees includes bilateral transactions (inter-state & intra-state) and the transactions undertaken through power exchanges.</i>			
<i>Note 2: Volume of electricity transacted by Global Energy Ltd is not included.</i>			
<i>Source: Information submitted by trading licensees</i>			

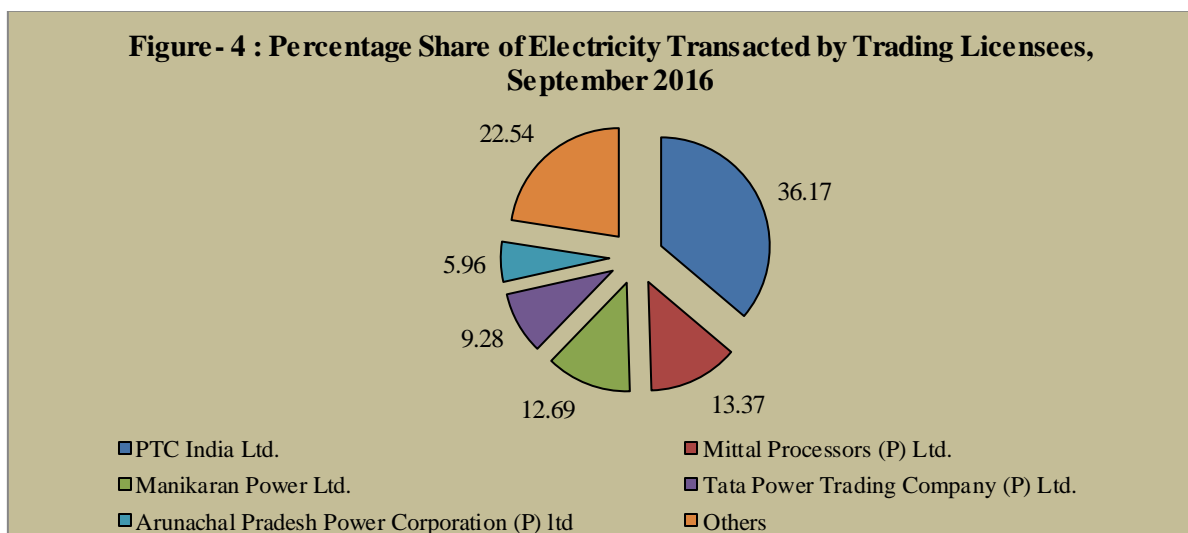


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, SEPTEMBER 2016		
Sr.No	Item	Sale Price of Traders (₹/kWh)
1	Minimum	0.03
2	Maximum	5.59
3	Weighted Average	3.35

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), SEPTEMBER 2016		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	3.66
2	PEAK	2.99
3	OFF PEAK	2.85

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, SEPTEMBER 2016			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	1.10	1.43
2	Maximum	6.50	4.50
3	Weighted Average	2.50	2.39

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, SEPTEMBER 2016			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	14.01	3.10
2	Day Ahead Contingency Contracts	4.95	3.16
3	Daily Contracts	9.60	3.94
	Total	28.56	3.39

Source: IEX

Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, SEPTEMBER 2016			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	14.18	2.84
2	Daily Contracts	-	-
	Total	14.18	2.84

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH DSM, SEPTEMBER 2016		
Sr.No	Item	Price in All India Grid (₹/kWh)
1	Minimum	0.00
2	Maximum	7.20
3	Average	1.78

Source: NLDC

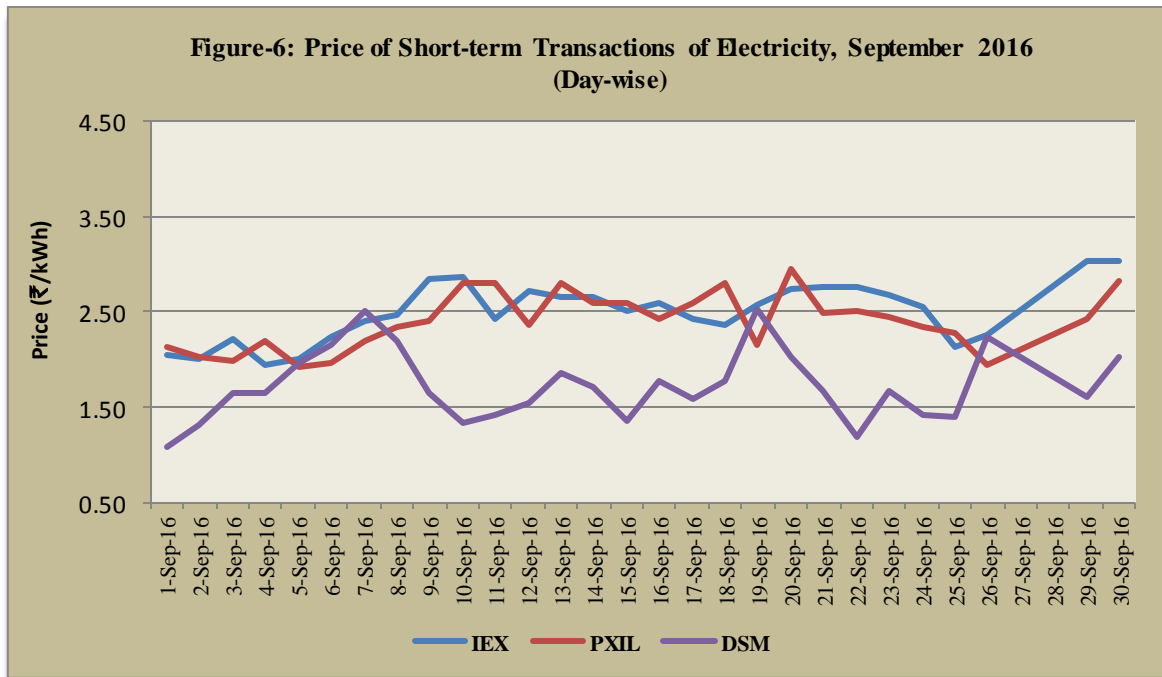
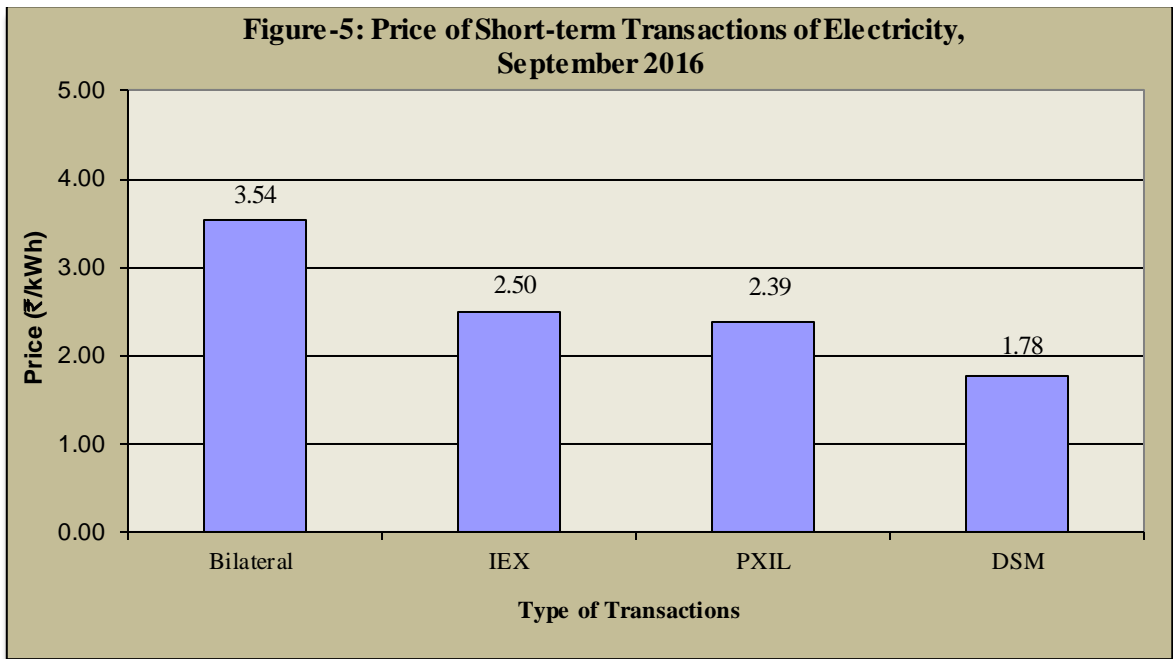


Table-9: VOLUME OF ELECTRICITY SOLD THROUGH BILATERAL, SEPTEMBER 2016		
Name of the Entity	Volume of Sale (MUs)	% of Volume
HIMACHAL PRADESH	479.42	8.02
J & K	415.25	6.95
CHHATTISGARH	413.17	6.91
COASTGEN	357.02	5.97
DB POWER	352.94	5.91
JAYPEE NIGRIE	290.69	4.86
GUJARAT	277.48	4.64
JITPL	272.15	4.55
RAJASTHAN	255.18	4.27
LANKO KONDAPALLI	238.97	4.00
KORBA WEST POWER	219.31	3.67
ODISHA	206.85	3.46
WEST BENGAL	188.49	3.15
GMR KAMALANGA	175.83	2.94
UTTARAKHAND	174.73	2.92
ESSAR POWER	161.43	2.70
SHREE CEMENT	154.77	2.59
MP	152.65	2.55
ADHUNIK POWER LTD	135.23	2.26
JINDAL POWER	124.19	2.08
ANDHRA PRADESH	117.01	1.96
MAHARASHTRA	110.83	1.85
DAGACHU	68.23	1.14
DVC	67.85	1.14
MEGHALAYA	52.81	0.88
KARCHAM WANGTOO	47.82	0.80
UTTAR PRADESH	42.56	0.71
SIMHAPURI	41.37	0.69
AD HYDRO	35.79	0.60
GMR CHHATTISGARH	35.51	0.59
NTPC STATIONS (ER)	35.20	0.59
BALCO	34.82	0.58
ACBIL	33.17	0.56
DHARIWAL POWER	26.92	0.45
TAMIL NADU	24.35	0.41
ASSAM	19.88	0.33
SPECTRUM	18.20	0.30
JINDAL STAGE-II	15.67	0.26
MANIPUR	14.57	0.24
MEENAKSHI	14.55	0.24
KARNATAKA	12.00	0.20
TELANGANA	11.13	0.19
LANKO_AMK	9.57	0.16
GOA	7.89	0.13
MARUTI COAL	7.67	0.13
STERLITE	6.99	0.12
DELHI	6.48	0.11
THERMAL POWERTECH	5.45	0.09
NAGALAND	3.49	0.06
PUNJAB	2.33	0.04
TOTAL	5975.85	100.00
Volume Sold by top 5 Regional Entities	2017.80	33.77

**Table-10: VOLUME OF ELECTRICITY PURCHASED THROUGH BILATERAL,
SEPTEMBER 2016**

Name of the Entity	Volume of Purchase (MUs)	% of Volume
HARYANA	1152.66	19.82
CHHATTISGARH	656.49	11.29
PUNJAB	582.65	10.02
TELANGANA	477.24	8.21
DELHI	460.46	7.92
MAHARASHTRA	447.49	7.70
UTTAR PRADESH	384.34	6.61
TAMIL NADU	338.79	5.83
BIHAR	303.87	5.23
BANGLADESH	176.36	3.03
ESSAR STEEL	168.70	2.90
WEST BENGAL	145.74	2.51
JHARKHAND	135.23	2.33
ANDHRA PRADESH	103.41	1.78
ODISHA	79.49	1.37
GUJARAT	71.84	1.24
UTTARAKHAND	43.72	0.75
NEPAL(NVVN)	36.53	0.63
MP	23.24	0.40
CHANDIGARH	10.80	0.19
ASSAM	8.62	0.15
MEGHALAYA	4.26	0.07
HIMACHAL PRADESH	3.28	0.06
TOTAL	5815.21	100.00
Volume Purchased by top 5 Regional Entities	3329.50	57.26

Table-11: VOLUME OF ELECTRICITY SOLD THROUGH POWER EXCHANGES, SEPTEMBER 2016		
Name of the Entity	Volume of Sale (MUs)	% of Volume
MP	418.77	11.59
HIMACHAL PRADESH	327.27	9.06
JITPL	269.26	7.46
GUJARAT	246.31	6.82
KARCHAM WANGTOO	228.27	6.32
JINDAL POWER	211.32	5.85
DELHI	148.73	4.12
DB POWER	127.66	3.53
HARYANA	123.00	3.41
MARUTI COAL	111.86	3.10
KORBA WEST POWER	99.75	2.76
MAHARASHTRA	82.15	2.27
CHUZACHEN HEP	75.25	2.08
JAYPEE NIGRIE	73.54	2.04
JORETHANG	71.51	1.98
SIMHAPURI	65.24	1.81
MEENAKSHI	63.01	1.74
NEEPCO STATIONS	54.14	1.50
TELANGANA	53.56	1.48
SIKKIM	50.78	1.41
TAMIL NADU	45.01	1.25
DHARIWAL POWER	38.83	1.08
AD HYDRO	37.23	1.03
ASSAM	36.48	1.01
NTPC STATIONS (WR)	35.97	1.00
KARNATAKA	33.88	0.94
J & K	33.35	0.92
TRIPURA	33.03	0.91
RAJASTHAN	31.17	0.86
ODISHA	29.47	0.82
THERMAL POWERTECH	27.86	0.77
CHHATTISGARH	23.39	0.65
NJPC	21.92	0.61
MIZORAM	21.30	0.59
WEST BENGAL	21.25	0.59
DCPP	21.05	0.58
NLC	19.82	0.55
ACBIL	18.31	0.51
MANIPUR	17.08	0.47
SHREE CEMENT	15.60	0.43
DVC	15.52	0.43
UTTAR PRADESH	14.18	0.39
ANDHRA PRADESH	13.67	0.38
ADHUNIK POWER LTD	11.76	0.33
NSPCL	11.50	0.32
NTPC STATIONS (NR)	9.50	0.26

SPECTRUM	8.87	0.25
NAGALAND	7.91	0.22
COASTGEN	7.67	0.21
UTTARAKHAND	5.94	0.16
MALANA	5.65	0.16
STERLITE	4.59	0.13
LANCO BUDHIL	4.43	0.12
ARUNACHAL PRADESH	3.91	0.11
KERALA	3.54	0.10
BALCO	3.24	0.09
EMCO	2.77	0.08
PUNJAB	2.68	0.07
GOA	2.40	0.07
CHANDIGARH	2.22	0.06
GMR KAMALANGA	2.21	0.06
NTPC STATIONS (SR)	1.95	0.05
NTPC STATIONS (ER)	1.18	0.03
MEGHALAYA	1.00	0.03
TOTAL	3611.74	100.00
Volume sold by top 5 Regional Entities	1489.88	41.25

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

Name of the Entity	Volume of Purchase (MUs)	% of Volume
GUJARAT	451.23	12.36
RAJASTHAN	425.10	11.64
BIHAR	291.24	7.98
TELANGANA	289.80	7.94
HARYANA	242.73	6.65
PUNJAB	237.82	6.51
DADRA & NAGAR HAVELI	229.18	6.28
KARNATAKA	223.84	6.13
WEST BENGAL	209.73	5.74
ESSAR STEEL	153.83	4.21
UTTAR PRADESH	149.09	4.08
UTTARAKHAND	131.89	3.61
ANDHRA PRADESH	128.65	3.52
J & K	53.03	1.45
ARUNACHAL PRADESH	52.70	1.44
DELHI	49.76	1.36
KERALA	46.73	1.28
MAHARASHTRA	45.55	1.25
DAMAN AND DIU	42.10	1.15
MP	39.87	1.09
CHHATTISGARH	36.56	1.00
HIMACHAL PRADESH	24.70	0.68
ODISHA	22.18	0.61
TAMIL NADU	16.44	0.45
MANIPUR	13.94	0.38
BALCO	12.24	0.34
GOA	12.23	0.33
DVC	7.54	0.21
PONDICHERRY	6.77	0.19
NAGALAND	2.64	0.07
CHANDIGARH	2.38	0.07
TOTAL	3651.47	100.00
Volume purchased by top 5 Regional Entities	1700.09	46.56

Table-13: VOLUME OF ELECTRICITY UNDER DRAWAL (EXPORTED) THROUGH DSM, SEPTEMBER 2016		
Name of the Entity	Volume of Under drawal (MUs)	% of Volume
TAMIL NADU	158.22	9.61
NTPC STATIONS (WR)	119.89	7.28
MAHARASHTRA	101.58	6.17
GUJARAT	99.65	6.05
MP	97.11	5.90
HARYANA	90.75	5.51
NHPC STATIONS (NR)	68.50	4.16
UTTAR PRADESH	64.45	3.91
NLC	56.33	3.42
RAJASTHAN	53.98	3.28
KARNATAKA	52.65	3.20
SASAN UMPP	45.98	2.79
PUNJAB	42.00	2.55
BIHAR	36.30	2.20
CHHATTISGARH	34.84	2.12
TELANGANA	32.53	1.98
ODISHA	28.90	1.75
NTPC STATIONS (NR)	28.06	1.70
JHARKHAND	27.23	1.65
ANDHRA PRADESH	25.72	1.56
NTPC STATIONS (ER)	19.61	1.19
ESSAR STEEL	19.60	1.19
DVC	18.02	1.09
NEEPCO STATIONS	17.58	1.07
WEST BENGAL	16.70	1.01
DELHI	16.28	0.99
JITPL	14.66	0.89
GOA	14.37	0.87
HIMACHAL PRADESH	13.59	0.83
DADRA & NAGAR HAVELI	11.83	0.72
NTPC STATIONS (SR)	11.21	0.68
JINDAL STAGE-II	10.91	0.66
UTTARAKHAND	10.46	0.64
GMR KAMALANGA	10.33	0.63
PONDICHERRY	10.20	0.62
JINDAL POWER	8.67	0.53
MANIPUR	8.36	0.51
KARCHAM WANGTOO	7.72	0.47
NSPCL	6.95	0.42
SIKKIM	6.94	0.42
NJPC	6.79	0.41
CGPL	6.56	0.40
JAYPEE NIGRIE	6.52	0.40
ARUNACHAL PRADESH	6.39	0.39
TEESTA HEP	5.49	0.33
DB POWER	5.38	0.33

THERMAL POWERTECH	5.28	0.32
CHUZACHEN HEP	5.27	0.32
EMCO	5.15	0.31
LANKO_AMK	5.09	0.31
ASSAM	4.96	0.30
KSK MAHANADI	4.68	0.28
MAITHON POWER LTD	3.99	0.24
AD HYDRO	3.92	0.24
DAGACHU	3.73	0.23
NAGALAND	3.71	0.23
BANGLADESH	3.45	0.21
MEGHALAYA	3.36	0.20
URI-2	3.16	0.19
ACBIL	3.14	0.19
DCPP	2.78	0.17
KERALA	2.69	0.16
MB POWER	2.61	0.16
COASTGEN	2.52	0.15
DAMAN AND DIU	2.49	0.15
SHREE CEMENT	2.15	0.13
JORETHANG	2.02	0.12
KORBA WEST POWER	1.99	0.12
ADHUNIK POWER LTD	1.88	0.11
RANGIT HEP	1.65	0.10
BALCO	1.58	0.10
SIMHAPURI	1.50	0.09
MIZORAM	1.50	0.09
CHANDIGARH	1.33	0.08
TRIPURA	1.26	0.08
ILF&S	1.17	0.07
DHARIWAL POWER	1.02	0.06
TOTAL	1646.84	100.00
Volume Exported by top 5 Regional Entities	1122.24	68.14

Table-14: VOLUME OF ELECTRICITY OVER DRAWAL (IMPORTED) THROUGH DSM, SEPTEMBER 2016		
Name of the Entity	Volume of Over drawal (MUs)	% of Volume
NTPC STATIONS (NR)	147.22	7.83
UTTAR PRADESH	135.08	7.19
NTPC STATIONS (WR)	91.36	4.86
MAHARASHTRA	77.07	4.10
KARNATAKA	77.07	4.10
NTPC STATIONS (ER)	72.28	3.85
WEST BENGAL	70.97	3.78
ASSAM	57.23	3.04
MP	53.01	2.82
ANDHRA PRADESH	53.01	2.82
BIHAR	52.84	2.81
RAJASTHAN	51.39	2.73
UTTARAKHAND	50.36	2.68
DADRA & NAGAR HAVELI	48.05	2.56
TELANGANA	48.05	2.56
PUNJAB	47.67	2.54
DVC	42.85	2.28
HIMACHAL PRADESH	38.20	2.03
DELHI	37.41	1.99
NTPC STATIONS (SR)	37.32	1.99
CHHATTISGARH	36.21	1.93
TAMIL NADU	36.21	1.93
GUJARAT	35.22	1.87
KERALA	35.22	1.87
ODISHA	30.98	1.65
BALCO	30.30	1.61
TRIPURA	27.92	1.49
ESSAR STEEL	27.22	1.45
HARYANA	26.35	1.40
NLC	17.09	0.91
DAGACHU	16.86	0.90
EMCO	16.82	0.90
CGPL	16.04	0.85
CHANDIGARH	15.94	0.85
MEGHALAYA	15.44	0.82
KORBA WEST POWER	14.94	0.80
JHARKHAND	13.75	0.73
STERLITE	13.66	0.73
ESSAR POWER	10.99	0.58
NSPCL	8.68	0.46
SHREE CEMENT	7.66	0.41

JORETHANG	7.28	0.39
NHPC STATIONS (NR)	6.44	0.34
LANCO BUDHIL	6.24	0.33
DCPP	5.96	0.32
NJPC	5.95	0.32
GMR KAMALANGA	5.93	0.32
JITPL	5.84	0.31
JINDAL STAGE-II	5.83	0.31
ARUNACHAL PRADESH	5.17	0.28
ILF&S	5.09	0.27
MAITHON POWER LTD	4.68	0.25
JAYPEE NIGRIE	4.66	0.25
GOA	4.66	0.25
DB POWER	4.63	0.25
LANKO KONDAPALLI	4.49	0.24
MB POWER	4.47	0.24
MIZORAM	4.24	0.23
JINDAL POWER	4.19	0.22
ACBIL	4.00	0.21
NEPAL(NVVN)	3.85	0.21
NAGALAND	3.73	0.20
KARCHAM WANGTOO	3.07	0.16
DAMAN AND DIU	2.71	0.14
ADHUNIK POWER LTD	2.61	0.14
NEEPCO STATIONS	2.46	0.13
COASTGEN	2.39	0.13
MANIPUR	2.27	0.12
JHABUA POWER_MP	2.01	0.11
PONDICHERRY	1.95	0.10
KSK MAHANADI	1.95	0.10
GMR CHHATTISGARH	1.83	0.10
THERMAL POWERTECH	1.55	0.08
SASAN UMPP	1.54	0.08
AD HYDRO	1.52	0.08
BANGLADESH	1.41	0.07
SPECTRUM	1.06	0.06
TOTAL	1879.59	100.00
Volume Imported by top 5 Regional Entities	527.81	28.08

Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), SEPTEMBER 2016		
Sr.No.	Name of the Entity	Total volume of net short-term transactions of electricity*
1	HARYANA	1207.99
2	PUNJAB	821.14
3	TELANGANA	717.87
4	BIHAR	611.65
5	UTTAR PRADESH	547.32
6	DELHI	376.15
7	ESSAR STEEL	330.13
8	MAHARASHTRA	275.56
9	DADRA & NAGAR HAVELI	265.39
10	CHHATTISGARH	257.85
11	KARNATAKA	202.39
12	WEST BENGAL	200.01
13	BANGLADESH	174.32
14	TAMIL NADU	163.85
15	RAJASTHAN	136.16
16	ANDHRA PRADESH	128.67
17	JHARKHAND	121.75
18	NTPC STATIONS (NR)	109.66
19	KERALA	76.08
20	ARUNACHAL PRADESH	47.57
21	DAMAN AND DIU	43.26
22	NEPAL(NVVN)	39.73
23	UTTARAKHAND	34.84
24	CHANDIGARH	25.56
25	NTPC STATIONS (SR)	24.16
26	NTPC STATIONS (ER)	16.28
27	CGPL	9.48
28	EMCO	8.91
29	ASSAM	4.92
30	ILF&S	3.45
31	BALCO	2.89
32	JHABUA POWER_MP	2.01
33	MB POWER	1.86
34	STERLITE	1.77
35	LANCO BUDHIL	1.70
36	MAITHON POWER LTD	0.69
37	PONDICHERRY	-1.48
38	RANGIT HEP	-1.51
39	URI-2	-2.79
40	KSK MAHANADI	-3.72
41	TEESTA HEP	-5.36
42	MALANA	-5.42
43	TRIPURA	-7.21
44	GOA	-7.78

45	NAGALAND	-8.75
46	NSPCL	-9.77
47	LANKO_AMK	-13.69
48	DCPP	-17.87
49	MIZORAM	-18.51
50	JINDAL STAGE-II	-21.46
51	NJPC	-22.76
52	MANIPUR	-23.37
53	SPECTRUM	-26.01
54	GMR CHHATTISGARH	-33.68
55	THERMAL POWERTECH	-37.05
56	MEGHALAYA	-37.48
57	SASAN UMPP	-44.45
58	ACBIL	-50.62
59	DVC	-50.81
60	DAGACHU	-55.11
61	SIKKIM	-56.82
62	NLC	-59.07
63	NHPC STATIONS (NR)	-62.07
64	NTPC STATIONS (WR)	-64.50
65	GUJARAT	-65.15
66	JORETHANG	-66.25
67	DHARIWAL POWER	-66.27
68	NEEPCO STATIONS	-69.26
69	AD HYDRO	-75.42
70	MEENAKSHI	-78.14
71	CHUZACHEN HEP	-80.11
72	SIMHAPURI	-107.99
73	MARUTI COAL	-119.54
74	ODISHA	-132.57
75	ADHUNIK POWER LTD	-146.26
76	ESSAR POWER	-151.28
77	SHREE CEMENT	-164.86
78	GMR KAMALANGA	-182.46
79	LANKO KONDAPALLI	-234.66
80	KARCHAM WANGTOO	-280.74
81	KORBA WEST POWER	-306.10
82	JINDAL POWER	-339.99
83	COASTGEN	-364.81
84	JAYPEE NIGRIE	-366.09
85	J & K	-395.57
86	DB POWER	-481.32
87	JITPL	-550.23
88	MP	-552.41
89	HIMACHAL PRADESH	-754.10
* 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, SEPTEMBER 2016			
	Details of Congestion	IEX	PXIL
A	Unconstrained Cleared Volume* (MUs)	3715.74	21.57
B	Actual Cleared Volume and hence scheduled (MUs)	3630.34	21.57
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	85.41	0.00
D	Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume	2.30%	0.00%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	48.58%	9.72%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	27.31%	28.57%
	6.00 - 12.00 hours	26.66%	15.36%
	12.00 - 18.00 hours	29.74%	40.71%
	18.00 - 24.00 hours	16.30%	15.36%
<i>* This power would have been scheduled had there been no congestion.</i>			
<i>Note: In case of PXIL, there was congestion in some time blocks, however, the entire unconstrained volume was cleared after market splitting. There was no inter-regional flow of power from WR-NR or vice versa as requirement of power was fulfilled in the same regions i.e. WR-WR and NR-NR.</i>			
<i>Source: IEX & PXIL & NLDC</i>			

Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (DAY-WISE) (MUs), SEPTEMBER 2016						
Date	Bilateral		Power Exchange (Area Clearing Volume# of Day Ahead Market)		Deviation Settlement (Over Draw+Under Generation)	Total Electricity Generation (MU) as given at CEA Website*
	Through Traders and PXs**	Direct	IEX	PXIL		
1-Sep-16	131.98	85.02	116.82	0.38	66.92	3033.74
2-Sep-16	131.54	82.94	113.63	0.68	64.73	3054.20
3-Sep-16	127.71	79.45	131.37	0.68	54.10	3061.65
4-Sep-16	127.02	73.71	116.17	0.38	61.11	3018.43
5-Sep-16	136.39	82.94	124.83	0.66	59.10	3099.08
6-Sep-16	139.33	81.82	138.22	0.68	57.82	3273.33
7-Sep-16	147.85	86.55	131.12	0.66	55.96	3378.34
8-Sep-16	145.77	85.81	131.24	0.66	58.32	3498.90
9-Sep-16	143.20	84.56	125.84	0.68	56.84	3558.24
10-Sep-16	141.19	84.24	139.13	0.66	62.06	3501.89
11-Sep-16	139.62	85.92	112.77	0.37	61.64	3380.30
12-Sep-16	118.52	83.32	131.02	0.65	61.26	3496.23
13-Sep-16	125.42	86.04	121.52	0.67	59.12	3522.80
14-Sep-16	121.36	82.06	115.62	0.68	60.39	3453.38
15-Sep-16	129.21	81.42	109.57	0.67	63.16	3333.82
16-Sep-16	120.36	62.58	118.33	1.27	61.53	3309.05
17-Sep-16	119.95	55.17	106.32	0.66	60.75	3203.44
18-Sep-16	120.03	55.55	106.22	0.34	58.77	3116.29
19-Sep-16	108.42	54.85	131.05	0.22	59.23	3247.14
20-Sep-16	120.19	55.01	126.70	0.64	62.78	3306.02
21-Sep-16	126.36	57.39	120.60	0.22	63.10	3280.71
22-Sep-16	121.97	55.43	126.86	0.24	70.47	3204.54
23-Sep-16	107.54	56.22	127.24	0.24	62.93	3213.28
24-Sep-16	126.87	59.99	114.17	0.23	63.31	3124.49
25-Sep-16	100.33	44.48	100.35	0.03	66.09	3033.52
26-Sep-16	121.76	56.20	107.02	0.21	61.52	3183.40
27-Sep-16	132.37	54.43	114.26	0.23	60.45	3222.79
28-Sep-16	107.41	54.89	123.36	0.23	65.39	3235.13
29-Sep-16	103.29	50.77	121.78	2.63	64.55	3233.75
30-Sep-16	109.96	45.43	127.19	5.03	59.34	3244.50
Total	3752.91	2064.20	3630.34	21.57	1842.73	97822.38
Source: NLDC						
* Gross Electricity Generation excluding electricity generation from renewables and captive power plants.						
** The volume of bilateral through PXs represents the volume through term-ahead contracts.						
# Area Clearing Volume represents the scheduled volume of all the bid areas.						

Table-18: PRICE OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (DAY-WISE)(₹/kWh), SEPTEMBER 2016									
Market Segment	Day ahead market of IEX			Day ahead market of PXIL			Under Drawl/Over Drawl from the Grid (DSM)		
Date	Minimum ACP	Maximum ACP	Weighted Average Price*	Minimum ACP	Maximum ACP	Weighted Average Price*	All India Grid		
							Minimum Price	Maximum Price	Average Price**
1-Sep-16	1.71	3.15	2.05	2.10	2.32	2.13	0.00	3.24	1.07
2-Sep-16	1.73	3.01	2.01	1.90	2.32	2.02	0.00	3.24	1.32
3-Sep-16	1.82	3.60	2.21	1.92	2.32	1.98	0.00	3.45	1.65
4-Sep-16	1.58	2.90	1.94	2.19	2.19	2.19	0.00	3.24	1.65
5-Sep-16	1.52	3.80	2.01	1.58	2.67	1.92	0.00	3.45	1.96
6-Sep-16	1.82	4.00	2.24	1.59	2.83	1.97	0.00	4.91	2.15
7-Sep-16	1.89	4.25	2.39	1.91	2.88	2.20	0.36	5.74	2.52
8-Sep-16	1.90	3.80	2.46	2.33	2.33	2.33	0.36	3.45	2.20
9-Sep-16	2.03	4.50	2.83	2.16	2.75	2.40	0.00	3.45	1.66
10-Sep-16	2.08	4.50	2.86	2.80	2.80	2.80	0.00	3.24	1.33
11-Sep-16	1.89	3.50	2.42	2.65	2.88	2.81	0.00	3.24	1.42
12-Sep-16	2.05	3.80	2.72	2.00	2.82	2.36	0.00	3.45	1.55
13-Sep-16	1.99	3.50	2.65	2.50	3.14	2.81	0.00	3.45	1.86
14-Sep-16	2.00	3.50	2.66	2.19	3.00	2.60	0.00	3.45	1.70
15-Sep-16	1.89	3.50	2.51	2.18	3.15	2.59	0.00	3.03	1.35
16-Sep-16	1.89	3.50	2.59	1.94	3.20	2.43	0.00	3.45	1.77
17-Sep-16	1.89	3.50	2.42	1.89	3.50	2.59	0.00	3.24	1.59
18-Sep-16	1.72	3.80	2.35	1.89	3.80	2.81	0.00	3.24	1.77
19-Sep-16	1.89	3.85	2.57	1.78	2.56	2.16	0.00	7.20	2.53
20-Sep-16	1.89	4.20	2.74	2.00	4.50	2.94	0.00	5.95	2.03
21-Sep-16	1.97	4.00	2.76	2.20	2.85	2.49	0.00	3.45	1.66
22-Sep-16	1.91	6.50	2.76	2.29	2.85	2.51	0.00	3.03	1.18
23-Sep-16	1.89	4.50	2.68	2.20	2.85	2.44	0.00	3.24	1.68
24-Sep-16	1.78	4.00	2.55	1.89	3.09	2.34	0.00	3.45	1.41
25-Sep-16	1.40	4.00	2.14	1.80	2.90	2.27	0.00	3.03	1.40
26-Sep-16	1.10	3.65	2.25	1.72	2.45	1.94	0.00	6.36	2.24
27-Sep-16	1.64	6.50	2.44	1.43	2.87	2.12	0.71	5.74	2.61
28-Sep-16	1.93	6.50	2.75	1.64	3.13	2.16	0.36	5.32	2.47
29-Sep-16	2.06	4.20	3.03	1.97	3.59	2.42	0.00	3.45	1.61
30-Sep-16	2.27	4.97	3.04	2.06	4.11	2.82	0.00	3.45	2.02
	1.10#	6.50#	2.50	1.43#	4.50#	2.39	0.00#	7.20#	1.78

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

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

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

Maximum/Minimum in the month

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

Name of the Entity	Through Bilateral			Through Power Exchange			Through DSM with Regional Grid			Total Net***
	Sale	Pur- chase	Net**	Sale	Pur- chase	Net**	Import (Over Drawl)	Export (Under Drawl)	Net**	
PUNJAB	2.33	582.65	580.33	2.68	237.82	235.14	47.67	42.00	5.67	821.14
HARYANA	0.00	1152.66	1152.66	123.00	242.73	119.73	26.35	90.75	-64.39	1207.99
RAJASTHAN	255.18	0.00	-255.18	31.17	425.10	393.92	51.39	53.98	-2.59	136.16
DELHI	6.48	460.46	453.98	148.73	49.76	-98.97	37.41	16.28	21.13	376.15
UTTAR PRADESH	42.56	384.34	341.79	14.18	149.09	134.91	135.08	64.45	70.62	547.32
UTTARAKHAND	174.73	43.72	-131.01	5.94	131.89	125.95	50.36	10.46	39.90	34.84
HIMACHAL PRADESH	479.42	3.28	-476.14	327.27	24.70	-302.57	38.20	13.59	24.61	-754.10
J & K	415.25	0.00	-415.25	33.35	53.03	19.68	0.00	0.00	0.00	-395.57
CHANDIGARH	0.00	10.80	10.80	2.22	2.38	0.16	15.94	1.33	14.60	25.56
MP	152.65	23.24	-129.41	418.77	39.87	-378.90	53.01	97.11	-44.10	-552.41
MAHARASHTRA	110.83	447.49	336.66	82.15	45.55	-36.60	77.07	101.58	-24.50	275.56
GUJARAT	277.48	71.84	-205.64	246.31	451.23	204.91	35.22	99.65	-64.42	-65.15
CHHATTISGARH	413.17	656.49	243.32	23.39	36.56	13.16	36.21	34.84	1.37	257.85
GOA	7.89	0.00	-7.89	2.40	12.23	9.83	4.66	14.37	-9.71	-7.78
DAMAN AND DIU	0.00	0.95	0.95	0.00	42.10	42.10	2.71	2.49	0.21	43.26
DADRA & NAGAR HAVEL	0.00	0.00	0.00	0.00	229.18	229.18	48.05	11.83	36.21	265.39
ANDHRA PRADESH	117.01	103.41	-13.60	13.67	128.65	114.97	53.01	25.72	27.29	128.67
KARNATAKA	12.00	0.00	-12.00	33.88	223.84	189.96	77.07	52.65	24.43	202.39
KERALA	0.00	0.36	0.36	3.54	46.73	43.19	35.22	2.69	32.53	76.08
TAMIL NADU	24.35	338.79	314.44	45.01	16.44	-28.57	36.21	158.22	-122.01	163.85
PONDICHERRY	0.00	0.00	0.00	0.00	6.77	6.77	1.95	10.20	-8.25	-1.48
TELANGANA	11.13	477.24	466.11	53.56	289.80	236.24	48.05	32.53	15.52	717.87
WEST BENGAL	188.49	145.74	-42.75	21.25	209.73	188.48	70.97	16.70	54.27	200.01
ODISHA	206.85	79.49	-127.36	29.47	22.18	-7.29	30.98	28.90	2.08	-132.57
BIHAR	0.00	303.87	303.87	0.00	291.24	291.24	52.84	36.30	16.54	611.65
JHARKHAND	0.00	135.23	135.23	0.00	0.00	0.00	13.75	27.23	-13.48	121.75
SIKKIM	0.00	0.00	0.00	50.78	0.00	-50.78	0.91	6.94	-6.04	-56.82
DVC	67.85	0.18	-67.67	15.52	7.54	-7.98	42.85	18.02	24.83	-50.81
ARUNACHAL PRA	0.00	0.00	0.00	3.91	52.70	48.79	5.17	6.39	-1.22	47.57
ASSAM	19.88	8.62	-11.26	36.48	0.39	-36.09	57.23	4.96	52.27	4.92
MANIPUR	14.57	0.42	-14.15	17.08	13.94	-3.14	2.27	8.36	-6.09	-23.37
MEGHALAYA	52.81	4.26	-48.55	1.00	0.00	-1.00	15.44	3.36	12.07	-37.48
MIZORAM	0.00	0.00	0.00	21.30	0.05	-21.25	4.24	1.50	2.74	-18.51
NAGALAND	3.49	0.00	-3.49	7.91	2.64	-5.28	3.73	3.71	0.02	-8.75
TRIPURA	0.84	0.00	-0.84	33.03	0.00	-33.03	27.92	1.26	26.66	-7.21
NTPC STATIONS (NR)	0.00	0.00	0.00	9.50	0.00	-9.50	147.22	28.06	119.17	109.66
NHPC STATIONS (NR)	0.00	0.00	0.00	0.00	0.00	0.00	6.44	68.50	-62.07	-62.07
NJPC	0.00	0.00	0.00	21.92	0.00	-21.92	5.95	6.79	-0.84	-22.76
AD HYDRO	35.79	0.00	-35.79	37.23	0.00	-37.23	1.52	3.92	-2.40	-75.42
KARCHAM WANGTOO	47.82	0.00	-47.82	228.27	0.00	-228.27	3.07	7.72	-4.65	-280.74
SHREE CEMENT	154.77	0.00	-154.77	15.60	0.00	-15.60	7.66	2.15	5.51	-164.86
LANCO BUDHIL	0.00	0.00	0.00	4.43	0.00	-4.43	6.24	0.11	6.13	1.70
MALANA	0.00	0.00	0.00	5.65	0.00	-5.65	0.66	0.43	0.23	-5.42
URI-2	0.00	0.00	0.00	0.00	0.00	0.00	0.37	3.16	-2.79	-2.79

NTPC STATIONS (WR)	0.00	0.00	0.00	35.97	0.00	-35.97	91.36	119.89	-28.53	-64.50
JINDAL POWER	124.19	0.00	-124.19	211.32	0.00	-211.32	4.19	8.67	-4.48	-339.99
LANKO_AMK	9.57	0.00	-9.57	0.00	0.00	0.00	0.96	5.09	-4.12	-13.69
NSPCL	0.00	0.00	0.00	11.50	0.00	-11.50	8.68	6.95	1.73	-9.77
ACBIL	33.17	0.00	-33.17	18.31	0.00	-18.31	4.00	3.14	0.86	-50.62
BALCO	34.82	0.00	-34.82	3.24	12.24	9.00	30.30	1.58	28.72	2.89
CGPL	0.00	0.00	0.00	0.00	0.00	0.00	16.04	6.56	9.48	9.48
DCPP	0.00	0.00	0.00	21.05	0.00	-21.05	5.96	2.78	3.18	-17.87
EMCO	0.00	0.00	0.00	2.77	0.00	-2.77	16.82	5.15	11.68	8.91
ESSAR STEEL	0.00	168.70	168.70	0.00	153.83	153.83	27.22	19.60	7.61	330.13
KSK MAHANADI	0.98	0.00	-0.98	0.00	0.00	0.00	1.95	4.68	-2.74	-3.72
ESSAR POWER	161.43	0.00	-161.43	0.04	0.00	-0.04	10.99	0.79	10.19	-151.28
JINDAL STAGE-II	15.67	0.00	-15.67	0.71	0.00	-0.71	5.83	10.91	-5.08	-21.46
DB POWER	352.94	0.03	-352.91	127.66	0.00	-127.66	4.63	5.38	-0.75	-481.32
DHARIWAL POWER	26.92	0.00	-26.92	38.83	0.00	-38.83	0.51	1.02	-0.51	-66.27
JAYPEE NIGRIE	290.69	0.00	-290.69	73.54	0.00	-73.54	4.66	6.52	-1.85	-366.09
GMR CHHATTISGARH	35.51	0.00	-35.51	0.00	0.00	0.00	1.83	0.00	1.83	-33.68
KORBA WEST POWER	219.31	0.00	-219.31	99.75	0.00	-99.75	14.94	1.99	12.96	-306.10
MB POWER	0.00	0.00	0.00	0.00	0.00	0.00	4.47	2.61	1.86	1.86
MARUTI COAL	7.67	0.00	-7.67	111.86	0.00	-111.86	0.00	0.00	0.00	-119.54
SPECTRUM	18.20	0.00	-18.20	8.87	0.00	-8.87	1.06	0.00	1.06	-26.01
JHABUA POWER_MP	0.00	0.00	0.00	0.00	0.00	0.00	2.01	0.00	2.01	2.01
SASAN UMPP	0.00	0.00	0.00	0.00	0.00	0.00	1.54	45.98	-44.45	-44.45
NTPC STATIONS (SR)	0.00	0.00	0.00	1.95	0.00	-1.95	37.32	11.21	26.12	24.16
LANKO KONDAPALLI	238.97	0.00	-238.97	0.11	0.00	-0.11	4.49	0.07	4.42	-234.66
SIMHAPURI	41.37	0.00	-41.37	65.24	0.00	-65.24	0.12	1.50	-1.38	-107.99
MEENAKSHI	14.55	0.00	-14.55	63.01	0.00	-63.01	0.15	0.73	-0.58	-78.14
COASTGEN	357.02	0.00	-357.02	7.67	0.00	-7.67	2.39	2.52	-0.12	-364.81
THERMAL POWERTECH	5.45	0.00	-5.45	27.86	0.00	-27.86	1.55	5.28	-3.73	-37.05
ILF&S	0.00	0.00	0.00	0.47	0.00	-0.47	5.09	1.17	3.92	3.45
NLC	0.00	0.00	0.00	19.82	0.00	-19.82	17.09	56.33	-39.24	-59.07
NTPC STATIONS (ER)	35.20	0.00	-35.20	1.18	0.00	-1.18	72.28	19.61	52.66	16.28
STERLITE	6.99	0.00	-6.99	4.59	0.00	-4.59	13.66	0.31	13.35	1.77
MAITHON POWER LTD	0.00	0.00	0.00	0.00	0.00	0.00	4.68	3.99	0.69	0.69
ADHUNIK POWER LTD	135.23	0.00	-135.23	11.76	0.00	-11.76	2.61	1.88	0.73	-146.26
CHUZACHEN HEP	0.00	0.00	0.00	75.25	0.00	-75.25	0.41	5.27	-4.86	-80.11
RANGIT HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.14	1.65	-1.51	-1.51
GMR KAMALANGA	175.83	0.00	-175.83	2.21	0.00	-2.21	5.93	10.33	-4.41	-182.46
JITPL	272.15	0.00	-272.15	269.26	0.00	-269.26	5.84	14.66	-8.82	-550.23
TEESTA HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.13	5.49	-5.36	-5.36
DAGACHU	68.23	0.00	-68.23	0.00	0.00	0.00	16.86	3.73	13.12	-55.11
JORETHANG	0.00	0.00	0.00	71.51	0.00	-71.51	7.28	2.02	5.27	-66.25
NEPAL(NWN)	0.00	36.53	36.53	0.00	0.00	0.00	3.85	0.66	3.20	39.73
BANGLADESH	0.00	176.36	176.36	0.00	0.00	0.00	1.41	3.45	-2.04	174.32
NEEPCO STATIONS	0.00	0.00	0.00	54.14	0.00	-54.14	2.46	17.58	-15.12	-69.26
TOTAL	5977.67	5817.14	-160.53	3613.07	3651.91	38.84	1883.95	1649.95	234.00	112.32

Source: NLDC

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

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

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

Figure 7: Bilateral Contracts executed by Traders in October, 2016

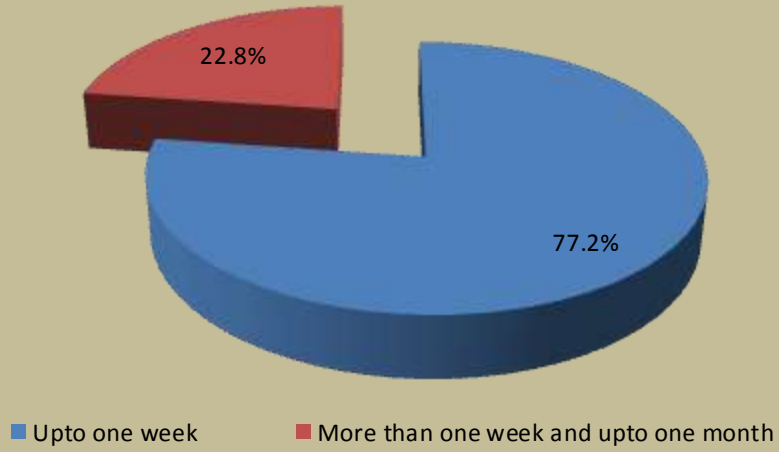


Figure-8: Forward Curve based on Prices of Bilateral Contracts

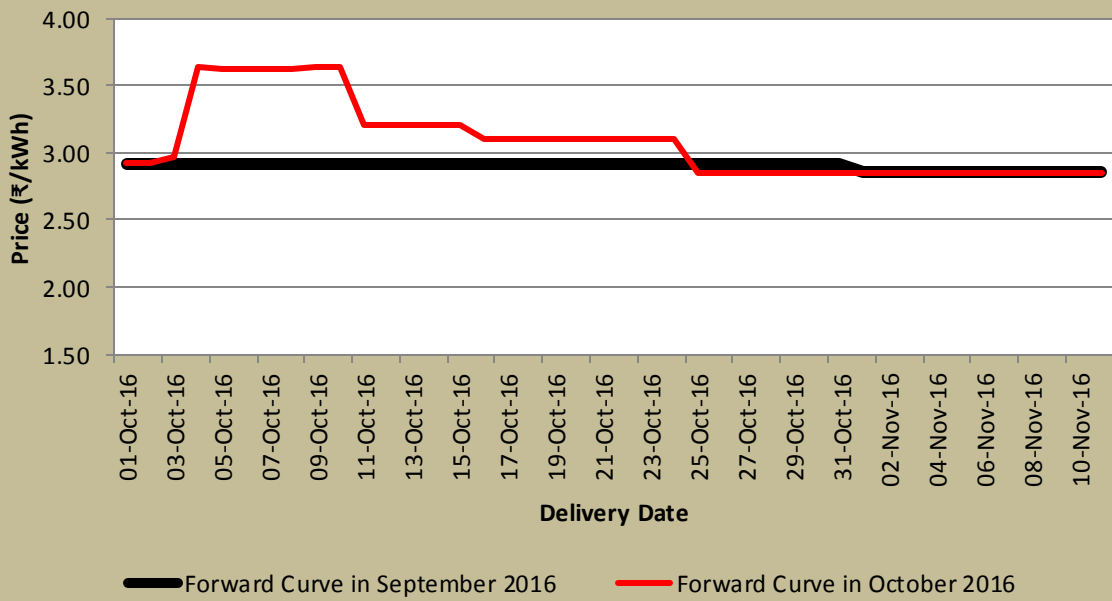


Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs) TRANACTED THROUGH POWER EXCHANGES, SEPTEMBER 2016					
Sr.No.	Details of REC Transactions	IEX		PXIL	
		Solar	Non-Solar	Solar	Non Solar
A	Volume of Buy Bid	15126	91355	16598	84170
B	Volume of Sell Bid	1881110	6714750	1696205	6196499
C	Ratio of Buy Bid to Sell Bid Volume	0.008	0.014	0.010	0.014
D	Market Clearing Volume (MWh)	15126	91355	16598	84170
E	Market Clearing Price (₹/MWh)	3500	1500	3500	1500

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

Note 2:

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