



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

December, 2017



Economics Division  
Central Electricity Regulatory Commission  
36, Janpath, Chanderlok Building



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## 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
DOYANG HEP	Doyang Hydro Electric Project
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
ILF&S	Infrastructure Leasing & Financial Services 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	LancoBudhil Hydro Power Private Limited
LANKOAMK	LancoAmarkantak Power Private Limited
LANKOKONDAPALLY	LancoKondapally Power Private Limited
LOKTAK	Loktak Power Project
MALANA	Malana Hydroelectric Plant
Maruti Coal	Maruti Clean Coal and Power Limited
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
NLC	Neyveli Lignite Corporation Limited
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
NVVN	NTPC Vidyut Vyapar Nigam Limited
NTECL Vallur	NTPC Tamilnadu Energy Company Limited Vallur
ONGC Platana	ONGC Tripura Power Company
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
Sasan UMPP	Sasan Ultra Mega Power Project
SEMBCORP	Sembcorp Gayatri Power Ltd
SHREE CEMENT	Shree Cement Limited
SIMHAPURI	Simhapuri Energy Private Limited
SKS Power	SKS Power Generation Chhatisgarh Limited
SPECTRUM	Spectrum Power Generation Ltd
TEESTA STG3	TEESTA STG3 Hydro Power Project

## 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 December 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 **December, 2017** are as under:

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

During December 2017, total electricity generation excluding generation from renewable and captive power plants in India was 96596.39 MUs (Table-1).

Of the total electricity generation, 9557.72 MUs (9.89%) was transacted through short-term, comprising of 4714.23 MUs (4.88%) through bilateral (through traders and term-ahead contracts on power exchanges and directly between distribution companies), followed by 3110.10 MUs (3.22%) through day ahead collective transactions on power exchanges (IEX and PXIL) and 1733.38 MUs (1.79%) through DSM (Table-1 & Figure-2).

Of the total short-term transactions, bilateral constitutes 49.32% (34.67% through traders and term-ahead contracts on power exchanges and 14.66% directly between distribution companies) followed by 32.54% through day ahead collective transactions on power exchanges and 18.14% 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 December, 2017. In December, 2017, 22 trading licensees were engaged in short term trading. Top 5 trading licensees had a share of 79.81% in the total volume traded by all the licensees. These are PTC India Ltd., Manikaran Power Ltd., NTPC Vidyut Vyapar Nigam Ltd., Mittal Processor (P) Ltd. and Tata Power Trading Company Pvt. Ltd.

Herfindahl-Hirschman Index (HHI) has been used for measuring the competition among the trading licensees. Increase in the HHI generally indicates decrease in competition and 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 0.2254 for the month of December, 2017, which indicates moderate concentration of market power (Table-2).

The volume of electricity transacted through IEX and PXIL in the day ahead market was 3107.74 MUs and 2.36 MUs respectively. The volume of total buy bids and sell bids was 3825.90 MUs and 6475.52 MUs respectively in IEX while the same was 13.76 MUs and 47.84 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 78.41 MUs and 27.85 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 ₹1.95/kWh, ₹6.40/kWh and ₹3.60/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 ₹3.65/kWh, ₹0.00/kWh, and ₹3.37/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 ₹1.23/kWh, ₹9.93/kWh and ₹3.25/kWh respectively in IEX and ₹2.99/kWh, ₹3.62/kWh and ₹3.38/kWh respectively in PXIL (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹3.91/kWh and ₹3.46/kWh respectively (Table-6 and Table-7).

**(iii) Price of electricity transacted through DSM:** The average deviation settlement price was ₹2.08/kWh. The minimum and maximum deviation settlement prices were ₹0.00/kWh and ₹6.36/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 Entity<sup>1</sup>-Wise)**

Of the total bilateral transactions, top 5 regional entities sold 63.75% of the volume, and these were Haryana, Punjab, Sembcorp Gayatri Power Ltd., Delhi and Uttar Pradesh. Top 5 regional entities purchased 62.82% of the volume, and these were Madhya Pradesh, Jammu & Kashmir, Maharashtra, Karnataka and Himachal Pradesh (Table-9 & 10).

Of the total power exchange transactions, top 5 regional entities sold 31.79% of the volume, and these were Telangana, Damodar Valley Corporation, Madhya Pradesh, TEESTA STG3 Hydro Power Project and Gujarat. Top 5 regional entities purchased 56.49% of the volume, and these were Gujarat, Andhra Pradesh, Telangana, Karnataka and Bihar (Table-11 & 12).

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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.



Of the total DSM transactions, top 5 regional entities underdrew 30.69% of the volume, and these were NTPC Stations (Western region), Maharashtra, Telangana, Gujarat and Sasan Ultra Mega Power Project (Table-13). Top 5 regional entities overdrew 29.66% of the volume, and these were Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and Nepal (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 Haryana, Punjab, Sembcorp Gayatri Power Ltd., Delhi and Uttar Pradesh. Top 5 electricity purchasing regional entities were Madhya Pradesh, Karnataka, Jammu & Kashmir, Maharashtra and Tamil Nadu.

#### **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 December, congestion occurred only in IEX. The details of congestion are shown in Table-16. The volume of electricity that could not be cleared due to congestion and could not be transacted through power exchanges is the difference between unconstrained cleared volume (volume of electricity that would have been scheduled, had there been no congestion) and actual cleared volume.

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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.

During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.004% of the unconstrained cleared volume. In terms of time, congestion occurred was 0.30% in IEX. There was no congestion in case of PXIL (Table-16).

## **V: Bilateral Contracts executed by Traders**

In addition to the analysis on short-term transactions of electricity in December, 2017, this section covers an analysis of bilateral contracts executed in January, 2018.

**(i) Duration of bilateral contracts:** During January, 2018, a total of 52 bilateral contracts (excluding banking/swap contracts) have been executed by traders for the volume of 1386.21 MUs. Figure-7 shows the percentage of contracts categorized according to the period of power supply. It can be observed from the figure that 71.2% of the bilateral contracts were executed for duration of up to one week, 25.0% of the contracts were executed for duration of more than a week and up to one month, 3.8% of the contracts were executed for duration of more than a month and up to three months, while no contracts were executed for duration of more than three months.

During the month, 11 banking/swapping bilateral contracts were also executed for the volume of 860.78 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 1<sup>st</sup> January, 2018 to 26<sup>th</sup> April, 2018 based on the bilateral contracts<sup>4</sup> executed till January, 2018. Forward curves have been drawn for the contracts executed in December, 2017 and January, 2018 for the purpose of comparison. It is observed that forward contract prices are significantly higher (for the period from 2<sup>nd</sup> January 2018 to 4<sup>th</sup> March 2018) for the contracts executed in January, 2018 compared to the contracts executed in December, 2017, after which, the prices of both the contracts have been moving together.

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<sup>4</sup>Excluding Banking/Swapping contracts

## **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 was held on power exchanges in December, 2011.

Trading in Renewable Energy Certificates (RECs) which was stayed by the Supreme Court in May 2017 has been allowed since July, 2017. However, the order restricted the trading of non-solar RECs on the condition to comply with the earlier prices.

The details of REC transactions for the month of December, 2017 are shown in Table-20. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 32.39 lacs and 19.78 lacs 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 about the variation in demand for non-solar RECs. For non-solar RECs, the ratio of buy bids to sell bids was 0.46 and 0.58 in IEX and PXIL respectively.

## VII: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 9.89%.
- Of the total short-term transactions, bilateral constitutes 49.32% (34.67% through traders and term-ahead contracts on power exchanges and 14.66% directly between distribution companies) followed by 32.54% through day ahead collective transactions on power exchanges and 18.14% through DSM (Table-1 & Figure-1).
- Top 5 trading licensees had a share of 79.81% 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 0.23, indicating moderate concentration of market power.
- The weighted average price of electricity transacted through trading licensees was ₹3.60/kWh. The weighted average prices of electricity transacted through IEX and PXIL were ₹3.25/kWh and ₹3.38/kWh respectively.
- The average price of electricity transacted through DSM was ₹2.08/kWh.
- Top 5 electricity selling regional entities were Haryana, Punjab, Sembcorp Gayatri Power Ltd., Delhi and Uttar Pradesh. Top 5 electricity purchasing regional entities were Madhya Pradesh, Karnataka, Jammu & Kashmir, Maharashtra and Tamil Nadu.
- During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.004% of the unconstrained cleared volume. In terms of time, congestion occurred was 0.30% in IEX. There was no congestion in case of PXIL.
- In December, 2017, 71.2% of the bilateral contracts were executed for duration of up to one week, 25.0% of the contracts were executed for duration of more than a week and up to one month, 3.8% of the contracts were executed for duration of more than a month and up to three months, while no contracts were executed for duration of more than three months.

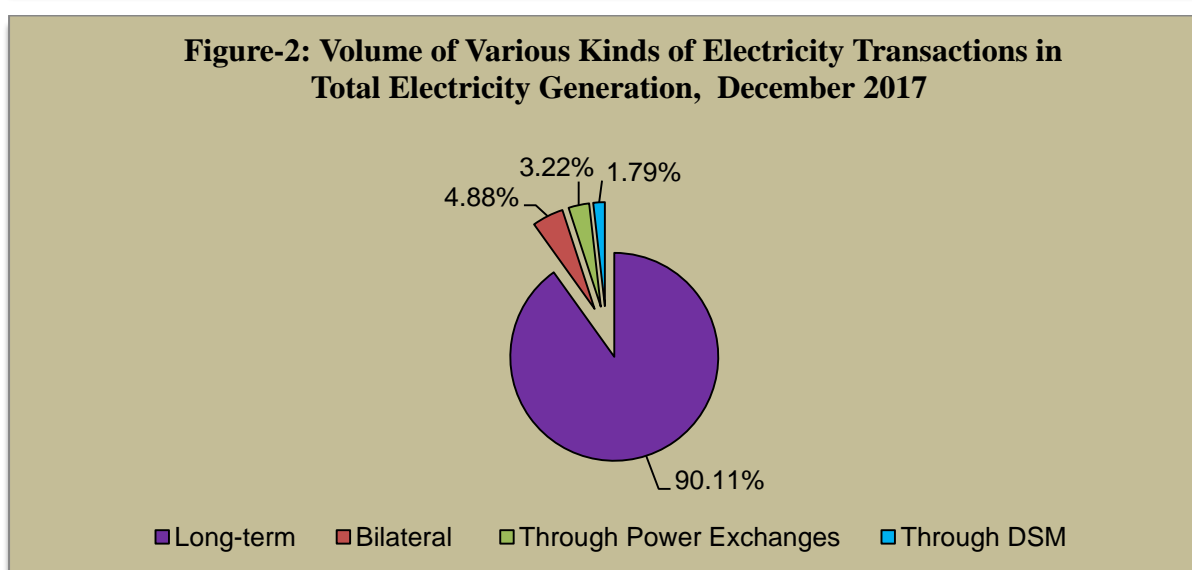
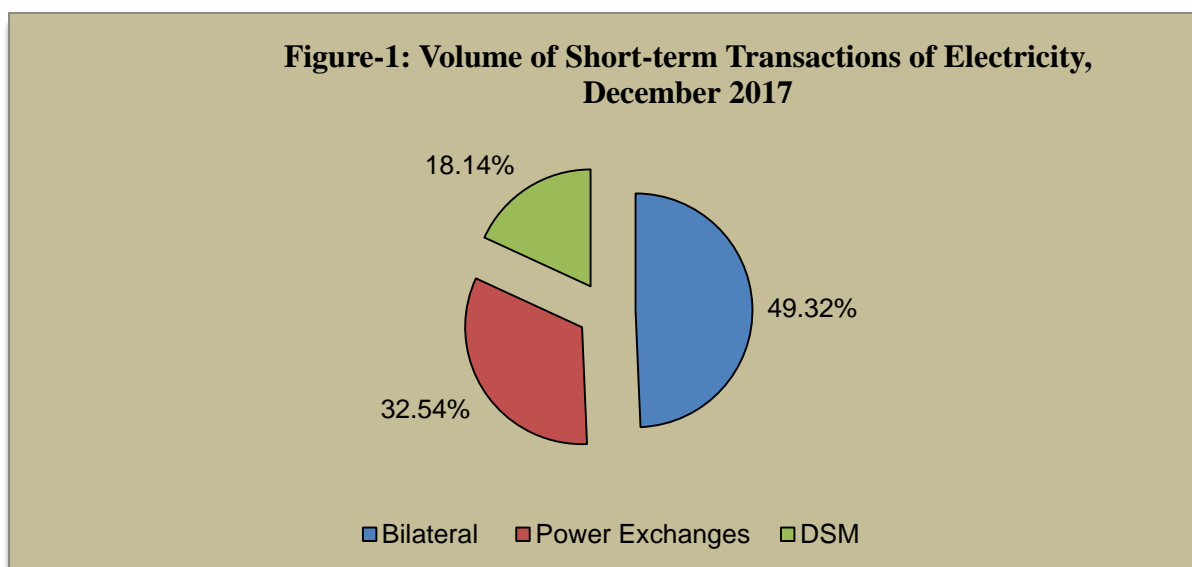
- The forward curve of electricity sale prices for the period from 1<sup>st</sup> January, 2018 to 26<sup>th</sup> April, 2018 based on the bilateral contracts<sup>5</sup> executed till January, 2018 shows that forward contract prices are significantly higher (for the period from 2<sup>nd</sup> January 2018 to 4<sup>th</sup> March 2018) for the contracts executed in January, 2018 compared to the contracts executed in December, 2017, after which, the prices of both the contracts have been moving together.
- Market clearing volume of non-solar RECs transacted on IEX and PXIL were 32.39 lacs and 19.78 lacs respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

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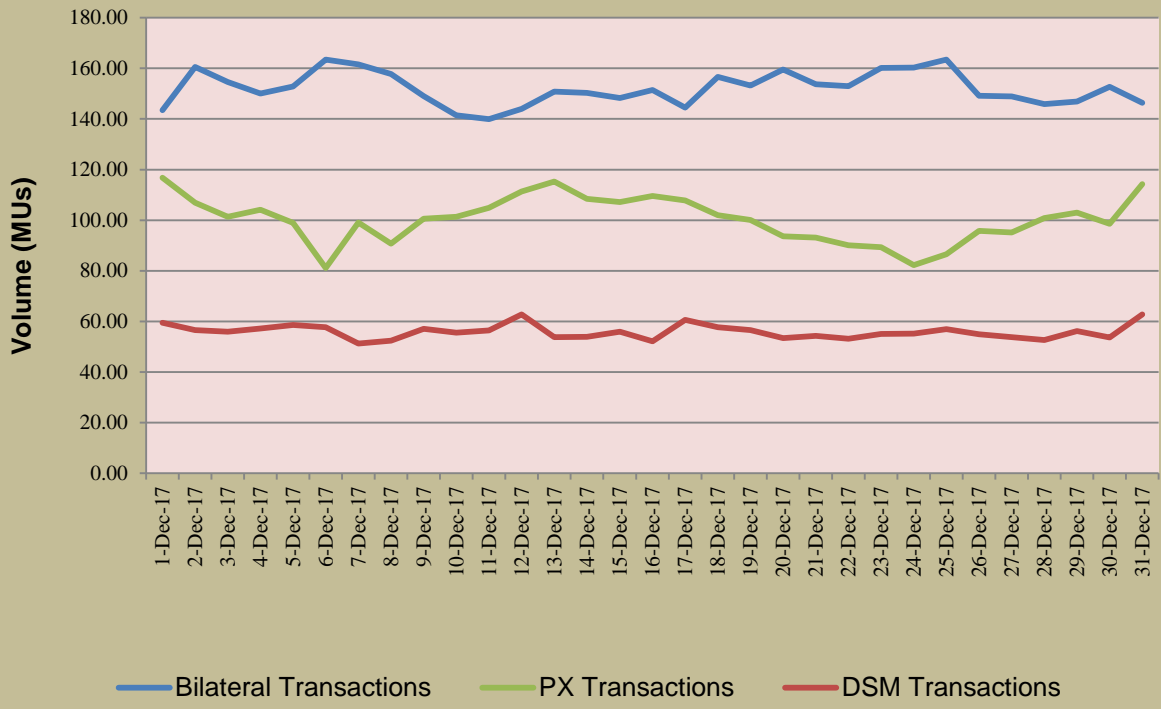
<sup>5</sup>*Excluding Banking/Swapping contracts*

Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), DECEMBER 2017				
Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	4714.23	49.32	4.88
	(i) Through Traders and PXs	3313.36	34.67	3.43
	(ii) Direct	1400.87	14.66	1.45
2	Through Power Exchanges	3110.10	32.54	3.22
	(i) IEX	3107.74	32.52	3.22
	(ii) PXIL	2.36	0.02	0.002
3	Through DSM	1733.38	18.14	1.79
	<b>Total</b>	<b>9557.72</b>	<b>-</b>	<b>9.89</b>
	<b>Total Generation</b>	<b>96596.39</b>	<b>-</b>	<b>-</b>

Source: NLDC



**Figure-3: Volume of Short-term Transactions of Electricity, December 2017 (Day-wise)**



<b>Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, DECEMBER 2017</b>			
<b>Sr.No</b>	<b>Name of the Trading Licensee</b>	<b>% Share in total Volume transacted by Trading Licensees</b>	<b>Herfindahl-Hirschman Index</b>
1	PTC India Ltd.	42.99	0.1848
2	Manikaran Power Ltd.	10.64	0.0113
3	NTPC Vidyut Vyapar Nigam Ltd.	10.49	0.0110
4	Mittal Processors (P) Ltd.	9.08	0.0082
5	Tata Power Trading Company (P) Ltd.	6.61	0.0044
6	Arunachal Pradesh Power Corporation (P) ltd	4.81	0.0023
7	GMR Energy Trading Ltd.	3.87	0.0015
8	Adani Enterprises Ltd.	2.28	0.0005
9	Knowledge Infrastructure Systems (P) Ltd	1.88	0.0004
10	JSW Power Trading Company Ltd	1.85	0.0003
11	Jaiprakash Associates Ltd.	1.57	0.0002
12	National Energy Trading & Services Ltd.	1.54	0.0002
13	RPG Power Trading Company Ltd.	0.74	0.0001
14	Shree Cement Ltd.	0.41	0.0000
15	Customized Energy Solutions India (P) Ltd.	0.40	0.0000
16	Statkraft Markets Pvt. Ltd.	0.40	0.0000
17	Instinct Infra & Power Ltd.	0.34	0.0000
18	My Home Power Private Ltd.	0.05	0.0000
19	Essar Electric Power Development Corp. Ltd.	0.02	0.0000
20	Parshavanath Power Projects Private Limited	0.02	0.0000
21	Gita Power & Infrastructure Private Limited	0.01	0.0000
22	Phillip Commodities India (P) Ltd.	0.01	0.0000
<b>TOTAL</b>		<b>100.00%</b>	<b>0.2254</b>
<b>Top 5 trading licensees</b>		<b>79.81%</b>	
<i>Note 1: Volume of electricity transacted by the trading licensees includes bilateral transactions (inter-state &amp; 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>			

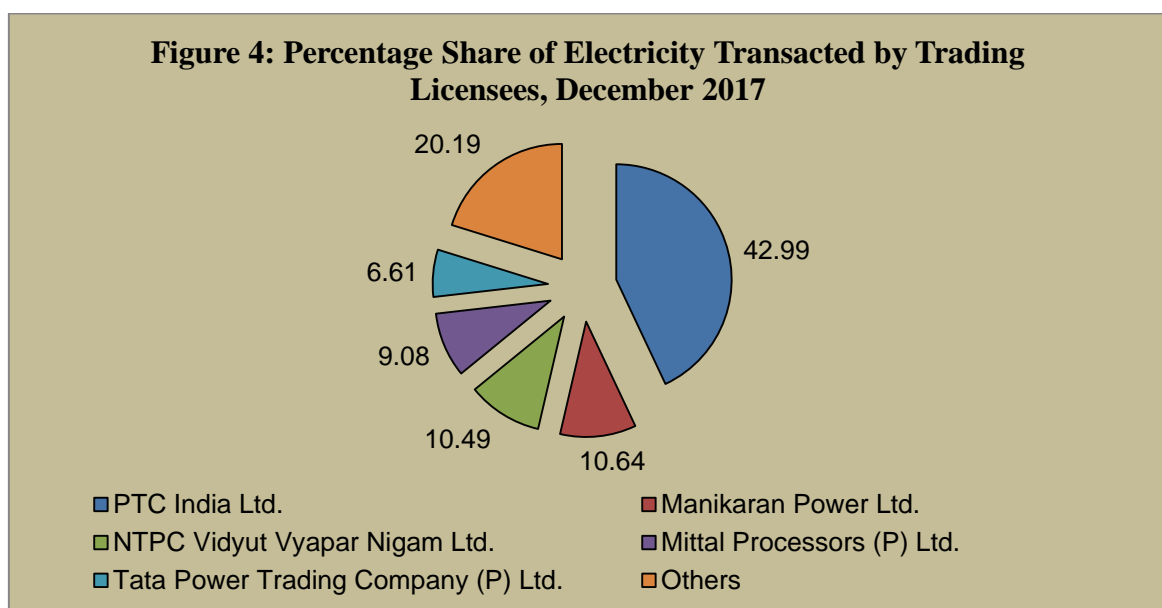




Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, DECEMBER 2017		
Sr.No	Item	Sale Price of Traders (₹/kWh)
1	Minimum	1.95
2	Maximum	6.40
3	Weighted Average	3.60

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), DECEMBER 2017		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	3.65
2	PEAK	0.00
3	OFF PEAK	3.37

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, DECEMBER 2017			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	1.23	2.99
2	Maximum	9.93	3.62
3	Weighted Average	3.25	3.38

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, DECEMBER 2017			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	37.12	4.10
2	Day Ahead Contingency Contracts	41.29	3.74
	<b>Total</b>	<b>78.41</b>	<b>3.91</b>

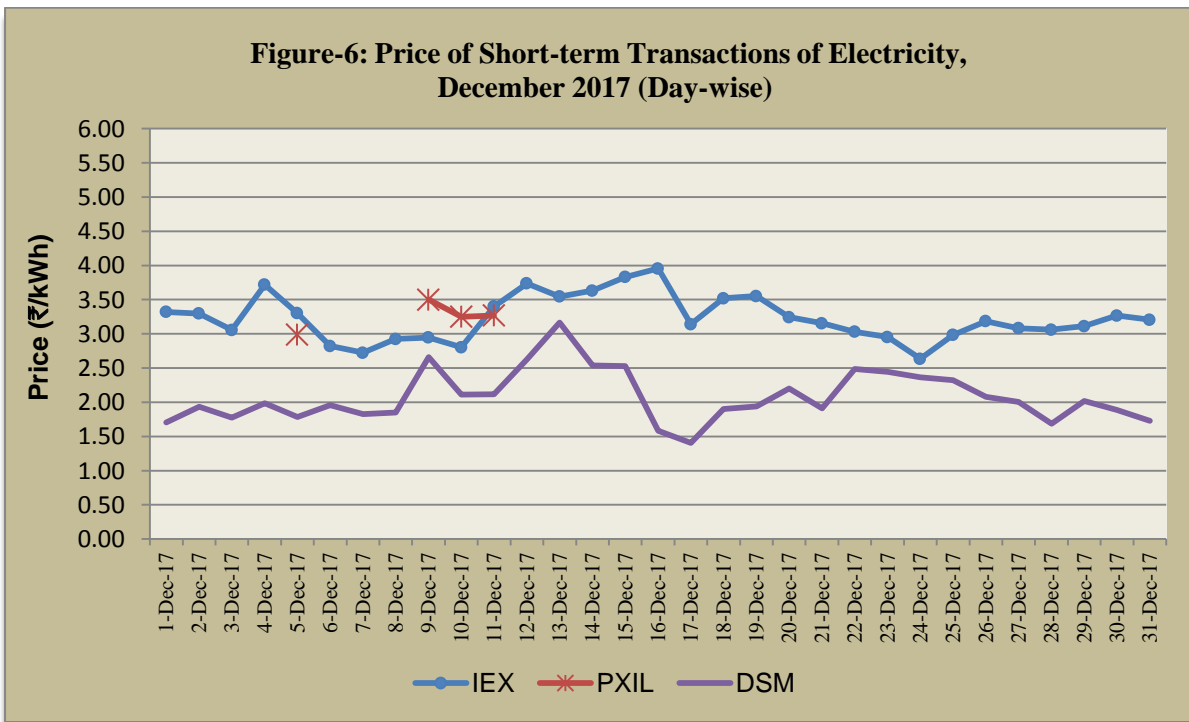
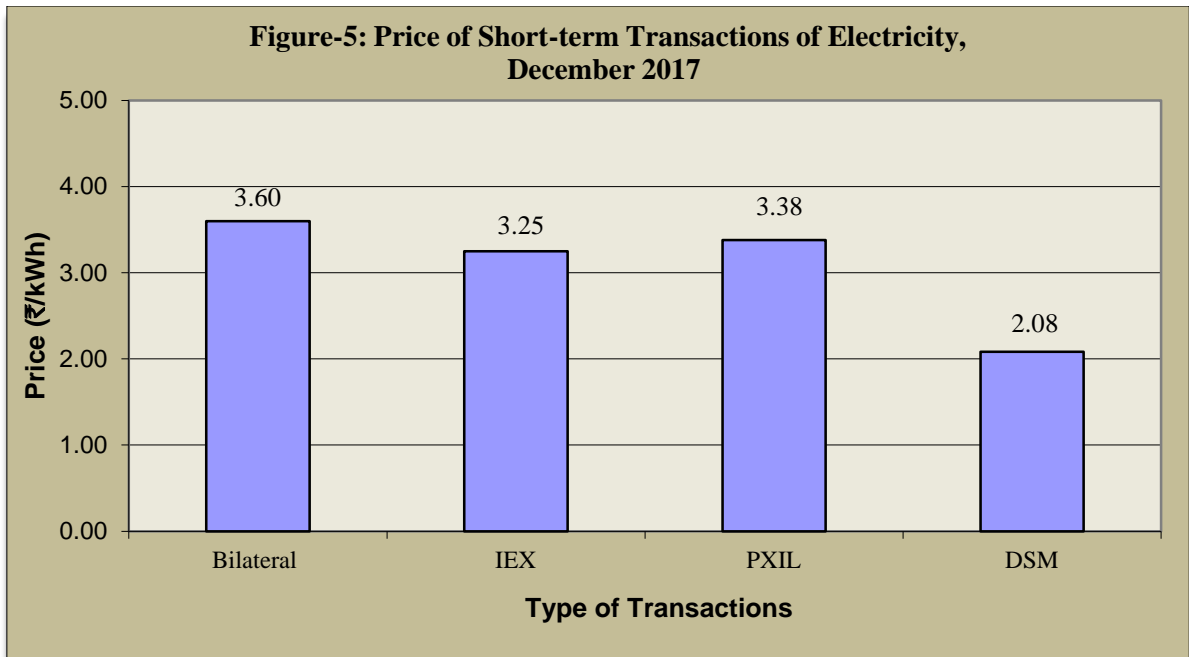
Source: IEX

Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, DECEMBER 2017			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	15.13	3.42
2	Any Day(s) Contracts	4.32	3.45
3	Weekly Contracts	8.40	3.53
	<b>Total</b>	<b>27.85</b>	<b>3.46</b>

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH DSM, DECEMBER 2017		
Sr.No	Item	Price in All India Grid (₹/kWh)
1	Minimum	0.00
2	Maximum	6.36
3	Average	2.08

Source: NLDC



**Note:** For PXIL, except on 5<sup>th</sup>, 9<sup>th</sup>-11<sup>th</sup> December 2017, there were no sellers in Day Ahead Product, hence, discontinuous price curve.

<b>Table-9: VOLUME OF ELECTRICITY SOLD THROUGH BILATERAL, DECEMBER 2017</b>		
<b>Name of the Entity</b>	<b>Volume of Sale (MUs)</b>	<b>% of Volume</b>
HARYANA	909.86	19.28
PUNJAB	619.00	13.12
SEMBCORP	576.05	12.21
DELHI	546.00	11.57
UTTAR PRADESH	357.35	7.57
ESSAR POWER	213.81	4.53
JINDAL STAGE-II	212.18	4.50
JAYPEE NIGRIE	189.58	4.02
WEST BENGAL	182.56	3.87
GUJARAT	122.35	2.59
JINDAL POWER	110.50	2.34
ADHUNIK POWER LTD	101.69	2.16
RAJASTHAN	100.73	2.13
ONGC PALATANA	48.36	1.02
SHREE CEMENT	46.25	0.98
ANDHRA PRADESH	37.58	0.80
BALCO	36.60	0.78
DAGACHU	27.36	0.58
MAHARASHTRA	27.08	0.57
TELANGANA	25.55	0.54
HIMACHAL PRADESH	23.93	0.51
JITPL	22.72	0.48
DVC	17.69	0.37
J & K	16.87	0.36
ASSAM	15.10	0.32
KARNATAKA	14.91	0.32
MB POWER	14.84	0.31
MP	14.79	0.31
ACBIL	13.70	0.29
TAMIL NADU	10.26	0.22
DB POWER	8.91	0.19
TRN ENERGY	8.31	0.18
CHANDIGARH	7.92	0.17
SIKKIM	6.79	0.14
MARUTI COAL	6.05	0.13
KARCHAM WANGTOO	5.63	0.12
MEGHALAYA	5.01	0.11
THERMAL POWERTECH	3.51	0.07
TRIPURA	3.44	0.07
GOA	2.59	0.05
NAGALAND	2.05	0.04
SPECTRUM	1.47	0.03
GMR KAMALANGA	0.74	0.02
JHABUA POWER_MP	0.63	0.01
DADRA & NAGAR HAVELI	0.28	0.01
COASTGEN	0.12	0.00
<b>TOTAL</b>	<b>4718.70</b>	<b>100.00</b>
<b>Volume Sold by top 5 Regional Entities</b>	<b>3008.26</b>	<b>63.75</b>

<b>Table-10: VOLUME OF ELECTRICITY PURCHASED THROUGH BILATERAL, DECEMBER 2017</b>		
<b>Name of the Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
MP	948.02	20.11
J & K	604.00	12.81
MAHARASHTRA	560.39	11.89
KARNATAKA	446.93	9.48
HIMACHAL PRADESH	402.33	8.53
TAMIL NADU	310.06	6.58
ESSAR STEEL	214.07	4.54
UTTARAKHAND	175.43	3.72
RAJASTHAN	125.49	2.66
ANDHRA PRADESH	113.24	2.40
CHHATTISGARH	109.46	2.32
ASSAM	101.67	2.16
BANGLADESH	87.26	1.85
JHARKHAND	83.56	1.77
NEPAL(NVVN)	75.05	1.59
ODISHA	65.99	1.40
KERALA	50.71	1.08
GOA	35.52	0.75
MEGHALAYA	28.89	0.61
UTTAR PRADESH	28.66	0.61
MANIPUR	26.44	0.56
HARYANA	18.69	0.40
DELHI	18.11	0.38
GUJARAT	15.96	0.34
PUNJAB	13.20	0.28
DAMAN AND DIU	12.72	0.27
TELANGANA	11.04	0.23
WEST BENGAL	10.10	0.21
BIHAR	9.43	0.20
SIKKIM	9.02	0.19
MIZORAM	2.58	0.05
DVC	0.20	0.00
<b>TOTAL</b>	<b>4714.23</b>	<b>100.00</b>
<b>Volume Purchased by top 5 Regional Entities</b>	<b>2961.68</b>	<b>62.82</b>

**Table-11: VOLUME OF ELECTRICITY SOLD THROUGH POWER EXCHANGES,  
DECEMBER 2017**

<b>Name of the Entity</b>	<b>Volume of Sale (MUs)</b>	<b>% of Volume</b>
TELANGANA	221.94	7.14
DVC	216.06	6.95
MP	214.50	6.90
TEESTA STG3	195.80	6.30
GUJARAT	140.32	4.51
MAHARASHTRA	136.95	4.40
KARNATAKA	125.11	4.02
PUNJAB	110.77	3.56
SEMBCORP	105.88	3.40
CHHATTISGARH	104.51	3.36
WEST BENGAL	98.66	3.17
DELHI	97.06	3.12
ASSAM	94.57	3.04
NLC	91.73	2.95
HIMACHAL PRADESH	83.23	2.68
TRN ENERGY	76.09	2.45
TRIPURA	75.81	2.44
J & K	61.28	1.97
KARCHAM WANGTOO	56.96	1.83
SPECTRUM	56.57	1.82
RAJASTHAN	53.34	1.71
JINDAL POWER	45.57	1.47
ANDHRA PRADESH	44.21	1.42
UTTAR PRADESH	40.91	1.32
ACBIL	40.53	1.30
DB POWER	31.89	1.03
JINDAL STAGE-II	31.53	1.01
UTTARAKHAND	31.29	1.01
HARYANA	30.88	0.99
GOA	29.81	0.96
JITPL	29.33	0.94
MANIPUR	23.28	0.75
BIHAR	22.34	0.72
ODISHA	21.89	0.70
THERMAL POWERTECH	20.92	0.67
JORETHANG	19.08	0.61
TASHIDENG HEP	18.15	0.58
MIZORAM	15.90	0.51
MB POWER	15.31	0.49
MEGHALAYA	15.19	0.49
AD HYDRO	13.93	0.45
SAINJ HEP	12.36	0.40
KERALA	12.18	0.39
CHUZACHEN HEP	12.06	0.39
NTPC STATIONS-WR	10.45	0.34
NTPC STATIONS-SR	10.08	0.32
SIKKIM	9.92	0.32
DADRA & NAGAR HAVELI	9.30	0.30
NTPC STATIONS-NER	8.95	0.29
MARUTI COAL	8.71	0.28

TAMIL NADU	8.70	0.28
NTPC STATIONS-NR	7.50	0.24
NTPC STATIONS-ER	6.18	0.20
DIKCHU HEP	6.04	0.19
NJPC	5.33	0.17
CHANDIGARH	4.87	0.16
SKS POWER	4.66	0.15
GMR KAMALANGA	2.64	0.08
JAYPEE NIGRIE	2.53	0.08
SHREE CEMENT	2.45	0.08
ONGC PALATANA	2.17	0.07
ILF&S	1.11	0.04
DHARIWAL POWER	1.10	0.04
LANCO BUDHIL	0.68	0.02
MAITHON POWER LTD	0.59	0.02
MALANA	0.32	0.01
NAGALAND	0.12	0.00
EMCO	0.03	0.00
<b>TOTAL</b>	<b>3110.10</b>	<b>100.00</b>
<b>Volume sold by top 5 Regional Entities</b>	<b>988.62</b>	<b>31.79</b>

**Table-12: VOLUME OF ELECTRICITY PURCHASED THROUGH POWER EXCHANGES, DECEMBER 2017**

<b>Name of the Entity</b>	<b>Volume of Purchase (MUs)</b>	<b>% of Volume</b>
GUJARAT	530.87	17.07
ANDHRA PRADESH	439.33	14.13
TELANGANA	273.01	8.78
KARNATAKA	264.04	8.49
BIHAR	249.67	8.03
RAJASTHAN	215.60	6.93
MAHARASHTRA	159.38	5.12
WEST BENGAL	140.77	4.53
ODISHA	138.36	4.45
UTTARAKHAND	125.30	4.03
TAMIL NADU	99.34	3.19
ESSAR STEEL	83.32	2.68
HARYANA	66.54	2.14
DELHI	57.68	1.85
ASSAM	54.94	1.77
J & K	54.93	1.77
MP	31.35	1.01
KERALA	31.17	1.00
HIMACHAL PRADESH	26.82	0.86
MEGHALAYA	14.11	0.45
DAMAN AND DIU	12.61	0.41
DADRA & NAGAR HAVELI	9.70	0.31
CHHATTISGARH	6.71	0.22
UTTAR PRADESH	6.63	0.21
PONDICHERRY	5.43	0.17
CHANDIGARH	5.42	0.17
GOA	4.07	0.13
PUNJAB	1.22	0.04
NAGALAND	0.91	0.03
MANIPUR	0.48	0.02
TRIPURA	0.38	0.01
<b>TOTAL</b>	<b>3110.10</b>	<b>100.00</b>
<b>Volume purchased by top 5 Regional Entities</b>	<b>1756.92</b>	<b>56.49</b>

**Table-13: VOLUME OF ELECTRICITY UNDER DRAWAL (EXPORTED) THROUGH DSM, DECEMBER 2017**

<b>Name of the Entity</b>	<b>Volume of Underdrawal (MUs)</b>	<b>% of Volume</b>
NTPC STATIONS-WR	103.33	6.68
MAHARASHTRA	101.65	6.57
TELANGANA	94.38	6.10
GUJARAT	91.20	5.89
SASAN UMPP	84.40	5.45
MP	70.25	4.54
NTPC STATIONS-NR	67.67	4.37
UTTAR PRADESH	56.26	3.63
ANDHRA PRADESH	53.57	3.46
NLC	47.98	3.10
CHHATTISGARH	47.61	3.08
DVC	39.87	2.58
J & K	38.08	2.46
BIHAR	37.22	2.40
UTTARAKHAND	36.24	2.34
PUNJAB	35.27	2.28
TAMIL NADU	32.74	2.12
KARNATAKA	31.47	2.03
RAJASTHAN	31.06	2.01
NHPC STATIONS	28.92	1.87
HARYANA	24.78	1.60
NTPC STATIONS-SR	22.26	1.44
NTPC STATIONS-ER	20.95	1.35
ESSAR STEEL	17.24	1.11
DELHI	16.57	1.07
HIMACHAL PRADESH	14.85	0.96
KSK MAHANADI	13.52	0.87
JAYPEE NIGRIE	13.20	0.85
PONDICHERRY	12.83	0.83
JINDAL STAGE-II	12.37	0.80
NEPAL(NVVN)	12.34	0.80
NSPCL	11.89	0.77
JHARKHAND	11.65	0.75
GMR KAMALANGA	10.55	0.68
GOA	10.07	0.65
EMCO	9.76	0.63
NEEPCO STATIONS	9.28	0.60
TEESTA HEP	8.44	0.55
TRIPURA	8.04	0.52
MB POWER	7.72	0.50
NJPC	7.55	0.49
ASSAM	7.49	0.48
MIZORAM	7.43	0.48
TRN ENERGY	7.35	0.48
WEST BENGAL	6.59	0.43
JITPL	6.26	0.40
LANKO_AMK	6.18	0.40
MEGHALAYA	6.05	0.39
CGPL	6.03	0.39
KARCHAM WANGTOO	5.89	0.38



MANIPUR	5.36	0.35
SKS POWER	4.78	0.31
JINDAL POWER	4.59	0.30
ACBIL	3.96	0.26
KERALA	3.89	0.25
CHANDIGARH	3.69	0.24
DCPP	3.66	0.24
SEMBCORP	3.63	0.23
DB POWER	3.52	0.23
SIKKIM	3.34	0.22
BANGLADESH	2.56	0.17
URI-2	2.46	0.16
RGPPL (DABHOL)	2.46	0.16
TEESTA STG3	2.42	0.16
ESSAR POWER	2.31	0.15
ODISHA	2.23	0.14
BALCO	2.09	0.13
MAITHON POWER LTD	2.00	0.13
THERMAL POWERTECH	1.87	0.12
ARUNACHAL PRADESH	1.69	0.11
COASTGEN	1.66	0.11
JORETHANG	1.53	0.10
RANGANADI HEP	1.52	0.10
ADHUNIK POWER LTD	1.52	0.10
NAGALAND	1.51	0.10
RANGIT HEP	1.40	0.09
TASHIDENG HEP	1.25	0.08
DHARIWAL POWER	1.14	0.07
DADRA & NAGAR HAVELI	1.09	0.07
JHABUA POWER_MP	1.00	0.06
CHUZACHEN HEP	0.89	0.06
AD HYDRO	0.87	0.06
NETCL VALLUR	0.81	0.05
ILF&S	0.80	0.05
LANCO BUDHIL	0.76	0.05
SHREE CEMENT	0.75	0.05
DAMAN AND DIU	0.66	0.04
LOKTAK	0.61	0.04
DOYANG HEP	0.45	0.03
RKM POWER	0.39	0.03
DIKCHU HEP	0.26	0.02
<b>Total</b>	<b>1547.68</b>	<b>100.00</b>
<b>Volume Exported by top 5 Regional Entities</b>	<b>474.95</b>	<b>30.69</b>

**Table-14: VOLUME OF ELECTRICITY OVER DRAWAL (IMPORTED) THROUGH DSM, DECEMBER 2017**

Name of the Entity	Volume of Over drawal (MUs)	% of Volume
ODISHA	139.37	7.89
RAJASTHAN	114.11	6.46
TAMIL NADU	111.81	6.33
UTTAR PRADESH	81.42	4.61
NEPAL(NVVN)	77.32	4.38
NTPC STATIONS-NR	72.34	4.09
HARYANA	71.24	4.03
WEST BENGAL	68.28	3.86
KARNATAKA	60.58	3.43
NTPC STATIONS-WR	57.64	3.26
MP	57.29	3.24
NTPC STATIONS-SR	56.01	3.17
GUJARAT	55.81	3.16
MAHARASHTRA	43.56	2.47
PUNJAB	41.32	2.34
NTPC STATIONS-ER	40.63	2.30
ANDHRA PRADESH	36.11	2.04
KERALA	36.04	2.04
HIMACHAL PRADESH	35.64	2.02
BIHAR	33.71	1.91
DELHI	30.04	1.70
ESSAR STEEL	28.53	1.62
JHARKHAND	23.62	1.34
DADRA & NAGAR HAVELI	21.60	1.22
CGPL	21.00	1.19
ASSAM	20.66	1.17
NETCL VALLUR	19.88	1.13
DVC	17.80	1.01
UTTARAKHAND	17.52	0.99
DAMAN AND DIU	16.60	0.94
SEMBCORP	16.42	0.93
J & K	16.16	0.91
ARUNACHAL PRADESH	14.79	0.84
TELANGANA	13.12	0.74
NLC	11.98	0.68
BALCO	11.63	0.66
THERMAL POWERTECH	10.79	0.61
CHHATTISGARH	10.62	0.60
CHANDIGARH	9.70	0.55
GOA	7.93	0.45
JINDAL STAGE-II	7.83	0.44
ILF&S	7.33	0.41
TRIPURA	7.17	0.41
DAGACHU	6.87	0.39
MB POWER	6.46	0.37
BANGLADESH	5.22	0.30
NAGALAND	5.17	0.29
JHABUA POWER_MP	4.96	0.28
ACBIL	4.51	0.26
JORETHANG	4.45	0.25

MAITHON POWER LTD	4.40	0.25
GMR KAMALANGA	4.20	0.24
TEESTA STG3	3.57	0.20
SIKKIM	3.42	0.19
RGPPL (DABHOL)	3.34	0.19
JAYPEE NIGRIE	3.24	0.18
SKS POWER	3.16	0.18
MEENAKSHI	3.08	0.17
KARCHAM WANGTOO	3.01	0.17
EMCO	2.72	0.15
RKM POWER	2.44	0.14
ESSAR POWER	2.37	0.13
NJPC	2.27	0.13
JINDAL POWER	2.24	0.13
MEGHALAYA	2.11	0.12
NSPCL	2.08	0.12
JITPL	2.01	0.11
MANIPUR	1.79	0.10
TASHIDENG HEP	1.79	0.10
SHREE CEMENT	1.65	0.09
RANGANADI HEP	1.60	0.09
GMR CHATTISGARH	1.57	0.09
NEEPCO STATIONS	1.57	0.09
KSK MAHANADI	1.42	0.08
MIZORAM	1.35	0.08
PONDICHERRY	1.26	0.07
TRN ENERGY	1.15	0.07
SASAN UMPP	1.15	0.07
DGEN MEGA POWER	1.02	0.06
DB POWER	0.90	0.05
DHARIWAL POWER	0.80	0.05
LANKO KONDAPALLI	0.80	0.05
COASTGEN	0.75	0.04
DCPP	0.71	0.04
AD HYDRO	0.69	0.04
SIMHAPURI	0.68	0.04
CHUZACHEN HEP	0.64	0.04
RANGIT HEP	0.54	0.03
ADHUNIK POWER LTD	0.48	0.03
LANCO BUDHIL	0.48	0.03
KORBA WEST POWER	0.42	0.02
DOYANG HEP	0.36	0.02
URI-2	0.28	0.02
TEESTA HEP	0.24	0.01
LOKTAK	0.17	0.01
MALANA	0.17	0.01
LANCO_AMK	0.08	0.00
DIKCHU HEP	0.02	0.00
<b>TOTAL</b>	<b>1766.78</b>	<b>100.00</b>
<b>Volume Imported by top 5 Regional Entities</b>	<b>524.03</b>	<b>29.66</b>

<b>Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), DECEMBER 2017</b>		
<b>Sr.No.</b>	<b>Name of the Entity</b>	<b>Total volume of net short-term transactions of electricity*</b>
1	MP	737.12
2	KARNATAKA	600.05
3	J & K	558.87
4	MAHARASHTRA	497.65
5	TAMIL NADU	469.51
6	ANDHRA PRADESH	453.31
7	HIMACHAL PRADESH	342.78
8	ODISHA	319.60
9	ESSAR STEEL	308.68
10	RAJASTHAN	270.08
11	UTTARAKHAND	250.72
12	GUJARAT	248.77
13	BIHAR	233.26
14	NEPAL(NVVN)	140.03
15	KERALA	101.86
16	JHARKHAND	95.53
17	BANGLADESH	89.92
18	ASSAM	60.10
19	DAMAN AND DIU	41.27
20	NTPC STATIONS-SR	23.67
21	DADRA & NAGAR HAVELI	20.63
22	NETCL VALLUR	19.06
23	MEGHALAYA	18.87
24	CGPL	14.97
25	NTPC STATIONS-ER	13.50
26	ARUNACHAL PRADESH	13.10
27	ILF&S	5.41
28	GOA	5.05
29	JHABUA POWER_MP	3.33
30	MEENAKSHI	3.08
31	NAGALAND	2.39
32	RKM POWER	2.04
33	MAITHON POWER LTD	1.80
34	GMR CHATTISGARH	1.57
35	DGEN MEGA POWER	1.02
36	RGPPL (DABHOL)	0.89
37	LANKO KONDAPALLI	0.80
38	RANGIT HEP	-0.86
39	LANCO BUDHIL	-0.96
40	COASTGEN	-1.03
41	CHANDIGARH	-1.36
42	DHARIWAL POWER	-1.43
43	URI-2	-2.18
44	NTPC STATIONS-NR	-2.83
45	DCPP	-2.95
46	LANKO_AMK	-6.10
47	PONDICHERRY	-6.13
48	SKS POWER	-6.27
49	DIKCHU HEP	-6.28
50	EMCO	-7.06

51	SIKKIM	-7.61
52	NEEPCO STATIONS	-7.71
53	TEESTA HEP	-8.20
54	NTPC STATIONS-NER	-8.95
55	GMR KAMALANGA	-9.74
56	NSPCL	-9.81
57	NJPC	-10.61
58	KSK MAHANADI	-12.10
59	CHUZACHEN HEP	-12.32
60	SAINJ HEP	-12.36
61	AD HYDRO	-14.11
62	MARUTI COAL	-14.76
63	THERMAL POWERTECH	-15.51
64	JORETHANG	-16.16
65	TASHIDENG HEP	-17.61
66	MIZORAM	-19.40
67	DAGACHU	-20.50
68	CHHATTISGARH	-25.33
69	BALCO	-27.05
70	NHPC STATIONS	-28.92
71	MB POWER	-31.40
72	DB POWER	-43.41
73	TELANGANA	-44.70
74	SHREE CEMENT	-47.80
75	ONGC PALATANA	-50.53
76	ACBIL	-53.68
77	NTPC STATIONS-WR	-56.14
78	JITPL	-56.30
79	SPECTRUM	-58.04
80	KARCHAM WANGTOO	-65.48
81	WEST BENGAL	-68.65
82	TRIPURA	-79.75
83	SASAN UMPP	-83.25
84	TRN ENERGY	-90.61
85	ADHUNIK POWER LTD	-102.72
86	NLC	-127.74
87	JINDAL POWER	-158.42
88	TEESTA STG3	-194.65
89	JAYPEE NIGRIE	-202.08
90	ESSAR POWER	-213.75
91	JINDAL STAGE-II	-248.25
92	DVC	-255.62
93	UTTAR PRADESH	-337.81
94	DELHI	-553.79
95	SEMBCORP	-669.14
96	PUNJAB	-709.29
97	HARYANA	-809.04
* 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, DECEMBER 2017</b>			
	<b>Details of Congestion</b>	<b>IEX</b>	<b>PXIL</b>
A	Unconstrained Cleared Volume* (MUs)	3107.87	2.36
B	Actual Cleared Volume and hence scheduled (MUs)	3107.74	2.36
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	0.13	0.00
D	Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume	0.004%	0.00%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	0.30%	0.00%
F	Congestion occurrence (%) time block wise		
	0.00 - 6.00 hours	0.00%	0.00%
	6.00 - 12.00 hours	66.67%	0.00%
	12.00 - 18.00 hours	22.22%	0.00%
	18.00 - 24.00 hours	11.11%	0.00%
<i>* This power would have been scheduled had there been no congestion.</i>			
Source: IEX & PXIL & NLDC			

**Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (DAY-WISE) (MUs), DECEMBER 2017**

Date	Bilateral		Power Exchange (Area Clearing Volume# of Day Ahead Market)		Deviation Settlement (Over Drawl+Under Generation)	Total Electricity Generation (MU) as given at CEA Website*
	Through Traders and PXs**	Direct	IEX	PXIL		
1-Dec-17	99.87	43.59	116.73	0.00	59.50	
2-Dec-17	112.74	47.87	106.90	0.00	56.51	
3-Dec-17	107.63	46.94	101.36	0.00	55.94	
4-Dec-17	102.95	47.10	104.15	0.00	57.22	
5-Dec-17	104.15	48.63	98.82	0.18	58.61	
6-Dec-17	114.53	48.93	81.08	0.00	57.65	
7-Dec-17	112.82	48.70	99.08	0.00	51.26	
8-Dec-17	109.43	48.37	90.70	0.00	52.41	
9-Dec-17	103.35	45.67	99.19	1.40	57.11	
10-Dec-17	104.36	37.11	101.24	0.09	55.55	
11-Dec-17	102.45	37.45	104.24	0.70	56.38	
12-Dec-17	105.73	38.30	111.39	0.00	62.77	
13-Dec-17	112.28	38.57	115.20	0.00	53.79	
14-Dec-17	111.06	39.23	108.44	0.00	53.92	
15-Dec-17	109.81	38.48	107.15	0.00	55.90	
16-Dec-17	111.81	39.70	109.54	0.00	52.18	
17-Dec-17	105.85	38.62	107.82	0.00	60.55	
18-Dec-17	106.93	49.69	102.04	0.00	57.67	
19-Dec-17	104.38	48.86	100.11	0.00	56.60	
20-Dec-17	110.87	48.71	93.61	0.00	53.40	
21-Dec-17	104.44	49.24	93.08	0.00	54.25	
22-Dec-17	105.13	47.83	90.09	0.00	53.18	
23-Dec-17	109.47	50.76	89.31	0.00	55.04	
24-Dec-17	108.64	51.63	82.26	0.00	55.22	
25-Dec-17	113.97	49.48	86.53	0.00	56.95	
26-Dec-17	101.03	48.20	95.81	0.00	54.89	
27-Dec-17	105.19	43.67	95.18	0.00	53.74	
28-Dec-17	100.70	45.20	100.83	0.00	52.62	
29-Dec-17	100.42	46.51	102.99	0.00	56.12	
30-Dec-17	108.73	44.04	98.58	0.00	53.70	
31-Dec-17	102.66	43.78	114.28	0.00	62.75	
<b>Total</b>	<b>3313.36</b>	<b>1400.87</b>	<b>3107.74</b>	<b>2.36</b>	<b>1733.38</b>	<b>96596.39</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.

Note: The data on total electricity generation (day-wise) could not be accessed from CEA website.

**Table-18: PRICE OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (DAY-WISE)(₹/kWh),  
DECEMBER, 2017**

Market Segment	Day ahead market of IEX			Day ahead market of PXIL			Under Drawl/Over Drawl from the Grid (DSM)		
	Minimum ACP	Maximum ACP	Weighted Average Price*	Minimum ACP	Maximum ACP	Weighted Average Price*	All India Grid		
Date	Minimum ACP	Maximum ACP	Weighted Average Price*	Minimum ACP	Maximum ACP	Weighted Average Price*	Minimum Price	Maximum Price	Average Price**
1-Dec-17	1.66	6.00	3.32	0.00	0.00	0.00	0.00	5.74	1.71
2-Dec-17	1.75	5.16	3.30	0.00	0.00	0.00	0.00	5.32	1.93
3-Dec-17	1.65	4.42	3.06	0.00	0.00	0.00	0.00	5.32	1.78
4-Dec-17	1.48	6.50	3.72	0.00	0.00	0.00	0.00	5.11	1.98
5-Dec-17	1.73	4.50	3.30	2.99	2.99	2.99	0.00	3.45	1.78
6-Dec-17	1.75	3.91	2.82	0.00	0.00	0.00	0.00	3.45	1.96
7-Dec-17	2.00	4.92	2.72	0.00	0.00	0.00	0.00	3.45	1.83
8-Dec-17	1.75	4.30	2.93	0.00	0.00	0.00	0.00	4.91	1.85
9-Dec-17	1.74	4.30	2.95	3.25	3.62	3.50	0.00	6.36	2.66
10-Dec-17	1.75	3.85	2.80	3.25	3.25	3.25	0.00	5.95	2.11
11-Dec-17	1.70	5.00	3.40	3.27	3.27	3.27	0.00	3.45	2.12
12-Dec-17	1.66	5.50	3.74	0.00	0.00	0.00	0.00	6.16	2.63
13-Dec-17	1.66	6.80	3.54	0.00	0.00	0.00	0.00	6.36	3.16
14-Dec-17	1.66	7.90	3.63	0.00	0.00	0.00	0.00	5.74	2.54
15-Dec-17	1.78	9.00	3.83	0.00	0.00	0.00	0.00	6.36	2.53
16-Dec-17	1.78	9.93	3.96	0.00	0.00	0.00	0.00	3.24	1.58
17-Dec-17	1.89	4.07	3.14	0.00	0.00	0.00	0.00	5.74	1.41
18-Dec-17	1.65	4.98	3.52	0.00	0.00	0.00	0.00	5.11	1.90
19-Dec-17	1.60	5.00	3.55	0.00	0.00	0.00	0.00	5.11	1.94
20-Dec-17	1.23	4.60	3.24	0.00	0.00	0.00	0.00	3.45	2.20
21-Dec-17	1.30	4.69	3.15	0.00	0.00	0.00	0.00	3.45	1.91
22-Dec-17	1.23	4.30	3.03	0.00	0.00	0.00	0.00	5.32	2.49
23-Dec-17	1.75	4.12	2.95	0.00	0.00	0.00	0.00	6.36	2.45
24-Dec-17	1.75	3.40	2.63	0.00	0.00	0.00	0.00	4.91	2.37
25-Dec-17	1.75	4.00	2.98	0.00	0.00	0.00	0.00	5.11	2.32
26-Dec-17	1.78	4.56	3.18	0.00	0.00	0.00	0.00	4.91	2.08
27-Dec-17	1.78	4.40	3.08	0.00	0.00	0.00	0.00	4.91	2.00
28-Dec-17	1.75	4.12	3.06	0.00	0.00	0.00	0.00	3.45	1.68
29-Dec-17	1.75	4.91	3.11	0.00	0.00	0.00	0.00	4.91	2.02
30-Dec-17	1.75	4.61	3.27	0.00	0.00	0.00	0.00	4.91	1.89
31-Dec-17	1.75	4.51	3.21	0.00	0.00	0.00	0.00	3.45	1.73
	<b>1.23#</b>	<b>9.93#</b>	<b>3.25</b>	<b>2.99#</b>	<b>3.62#</b>	<b>3.38</b>	<b>0.00#</b>	<b>6.36#</b>	<b>2.08</b>

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

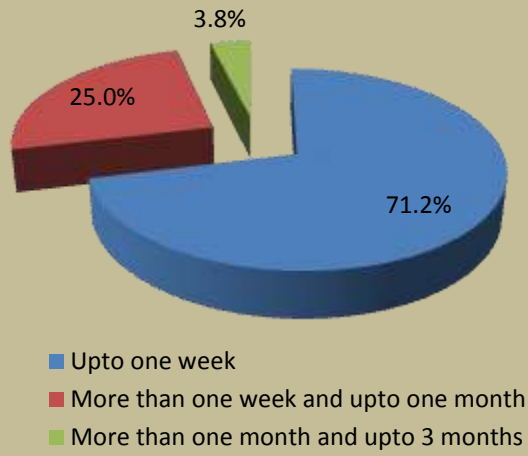


**Table-19: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY\*-WISE)  
(MUs), DECEMBER 2017**

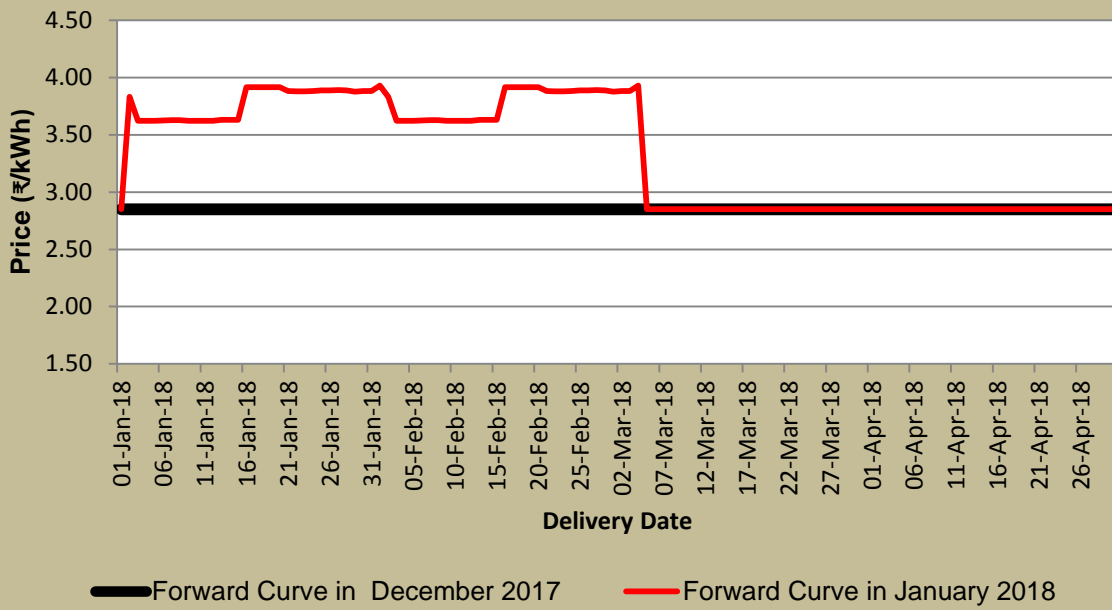
Name of the Entity	Through Bilateral			Through Power Exchange			Through DSM with Regional Grid			Total Net***
	Sale	Purchase	Net**	Sale	Purchase	Net**	Import (Over Draw)	Export (Under Draw)	Net**	
PUNJAB	619.00	13.20	-605.80	110.77	1.22	-109.54	41.32	35.27	6.05	-709.29
HARYANA	909.86	18.69	-891.17	30.88	66.54	35.67	71.24	24.78	46.46	-809.04
RAJASTHAN	100.73	125.49	24.76	53.34	215.60	162.26	114.11	31.06	83.05	270.08
DELHI	546.00	18.11	-527.89	97.06	57.68	-39.38	30.04	16.57	13.48	-553.79
UP	357.35	28.66	-328.68	40.91	6.63	-34.28	81.42	56.26	25.16	-337.81
UTTARAKHAND	0.00	175.43	175.43	31.29	125.30	94.01	17.52	36.24	-18.72	250.72
HP	23.93	402.33	378.40	83.23	26.82	-56.41	35.64	14.85	20.79	342.78
J & K	16.87	604.00	587.14	61.28	54.93	-6.35	16.16	38.08	-21.92	558.87
CHANDIGARH	7.92	0.00	-7.92	4.87	5.42	0.55	9.70	3.69	6.01	-1.36
MP	14.79	948.02	933.24	214.50	31.35	-183.15	57.29	70.25	-12.96	737.12
MAHARASHTRA	27.08	560.39	533.30	136.95	159.38	22.43	43.56	101.65	-58.09	497.65
GUJARAT	122.35	15.96	-106.40	140.32	530.87	390.55	55.81	91.20	-35.38	248.77
CHHATTISGARH	0.00	109.46	109.46	104.51	6.71	-97.81	10.62	47.61	-36.98	-25.33
GOA	2.59	35.52	32.93	29.81	4.07	-25.73	7.93	10.07	-2.14	5.05
DAMAN & DIU	0.00	12.72	12.72	0.00	12.61	12.61	16.60	0.66	15.94	41.27
D & N HAVELI	0.28	0.00	-0.28	9.30	9.70	0.40	21.60	1.09	20.51	20.63
ANDHRA PRADESH	37.58	113.24	75.66	44.21	439.33	395.12	36.11	53.57	-17.46	453.31
KARNATAKA	14.91	446.93	432.02	125.11	264.04	138.92	60.58	31.47	29.11	600.05
KERALA	0.00	50.71	50.71	12.18	31.17	18.99	36.04	3.89	32.16	101.86
TAMIL NADU	10.26	310.06	299.81	8.70	99.34	90.64	111.81	32.74	79.06	469.51
PONDICHERRY	0.00	0.00	0.00	0.00	5.43	5.43	1.26	12.83	-11.57	-6.13
TELANGANA	25.55	11.04	-14.52	221.94	273.01	51.07	13.12	94.38	-81.25	-44.70
WEST BENGAL	182.56	10.10	-172.46	98.66	140.77	42.12	68.28	6.59	61.69	-68.65
ODISHA	0.00	65.99	65.99	21.89	138.36	116.48	139.37	2.23	137.1	319.60
BIHAR	0.00	9.43	9.43	22.34	249.67	227.34	33.71	37.22	-3.51	233.26
JHARKHAND	0.00	83.56	83.56	0.00	0.00	0.00	23.62	11.65	11.97	95.53
SIKKIM	6.79	9.02	2.23	9.92	0.00	-9.92	3.42	3.34	0.08	-7.61
DVC	17.69	0.20	-17.49	216.06	0.00	-216.0	17.80	39.87	-22.07	-255.62
ARUNACHAL PRADESH	0.00	0.00	0.00	0.00	0.00	0.00	14.79	1.69	13.10	13.10
ASSAM	15.10	101.67	86.57	94.57	54.94	-39.63	20.66	7.49	13.16	60.10
MEGHALAYA	5.01	28.89	23.89	15.19	14.11	-1.08	2.11	6.05	-3.94	18.87
MIZORAM	0.00	2.58	2.58	15.90	0.00	-15.90	1.35	7.43	-6.08	-19.40
NAGALAND	2.05	0.00	-2.05	0.12	0.91	0.79	5.17	1.51	3.66	2.39
TRIPURA	3.44	0.00	-3.44	75.81	0.38	-75.43	7.17	8.04	-0.88	-79.75
NTPC -NR	0.00	0.00	0.00	7.50	0.00	-7.50	72.34	67.67	4.67	-2.83
NHPC STN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	28.92	-28.92	-28.92
NJPC	0.00	0.00	0.00	5.33	0.00	-5.33	2.27	7.55	-5.28	-10.61
AD HYDRO	0.00	0.00	0.00	13.93	0.00	-13.93	0.69	0.87	-0.18	-14.11
KARCHAM WAPDA	5.63	0.00	-5.63	56.96	0.00	-56.96	3.01	5.89	-2.88	-65.48
SHREE CEMENT	46.25	0.00	-46.25	2.45	0.00	-2.45	1.65	0.75	0.90	-47.80
URI-2	0.00	0.00	0.00	0.00	0.00	0.00	0.28	2.46	-2.18	-2.18
SAINJ HEP	0.00	0.00	0.00	12.36	0.00	-12.36	0.00	0.00	0.00	-12.36
NTPC -WR	0.00	0.00	0.00	10.45	0.00	-10.45	57.64	103.33	-45.69	-56.14
JINDAL POWER	110.50	0.00	-110.50	45.57	0.00	-45.57	2.24	4.59	-2.35	-158.42
LANKO_AMK	0.00	0.00	0.00	0.00	0.00	0.00	0.08	6.18	-6.10	-6.10

NSPCL	0.00	0.00	0.00	0.00	0.00	0.00	2.08	11.89	-9.81	-9.81
ACBIL	13.70	0.00	-13.70	40.53	0.00	-40.53	4.51	3.96	0.55	-53.68
BALCO	36.60	0.00	-36.60	0.00	0.00	0.00	11.63	2.09	9.55	-27.05
CGPL	0.00	0.00	0.00	0.00	0.00	0.00	21.00	6.03	14.97	14.97
DCPP	0.00	0.00	0.00	0.00	0.00	0.00	0.71	3.66	-2.95	-2.95
EMCO	0.00	0.00	0.00	0.03	0.00	-0.03	2.72	9.76	-7.03	-7.06
ESSAR STEEL	0.00	214.07	214.07	0.00	83.32	83.32	28.53	17.24	11.29	308.68
KSK MAHANAD	0.00	0.00	0.00	0.00	0.00	0.00	1.42	13.52	-12.10	-12.10
ESSAR POWER	213.81	0.00	-213.81	0.00	0.00	0.00	2.37	2.31	0.06	-213.75
JINDAL STG-II	212.18	0.00	-212.18	31.53	0.00	-31.53	7.83	12.37	-4.54	-248.25
DB POWER	8.91	0.00	-8.91	31.89	0.00	-31.89	0.90	3.52	-2.62	-43.41
DHARIWAL POW	0.00	0.00	0.00	1.10	0.00	-1.10	0.80	1.14	-0.33	-1.43
JAYPEE NIGRI	189.58	0.00	-189.58	2.53	0.00	-2.53	3.24	13.20	-9.97	-202.08
GMR CHATTIS	0.00	0.00	0.00	0.00	0.00	0.00	1.57	0.00	1.57	1.57
MB POWER	14.84	0.00	-14.84	15.31	0.00	-15.31	6.46	7.72	-1.25	-31.40
MARUTI COAL	6.05	0.00	-6.05	8.71	0.00	-8.71	0.00	0.00	0.00	-14.76
SPECTRUM	1.47	0.00	-1.47	56.57	0.00	-56.57	0.00	0.00	0.00	-58.04
JHABUA P_MP	0.63	0.00	-0.63	0.00	0.00	0.00	4.96	1.00	3.96	3.33
SASAN UMPP	0.00	0.00	0.00	0.00	0.00	0.00	1.15	84.40	-83.25	-83.25
TRN ENERGY	8.31	0.00	-8.31	76.09	0.00	-76.09	1.15	7.35	-6.20	-90.61
RKM POWER	0.00	0.00	0.00	0.00	0.00	0.00	2.44	0.39	2.04	2.04
SKS POWER	0.00	0.00	0.00	4.66	0.00	-4.66	3.16	4.78	-1.61	-6.27
NTPC -SR	0.00	0.00	0.00	10.08	0.00	-10.08	56.01	22.26	33.75	23.67
MEENAKSHI	0.00	0.00	0.00	0.00	0.00	0.00	3.08	0.00	3.08	3.08
COASTGEN	0.12	0.00	-0.12	0.00	0.00	0.00	0.75	1.66	-0.91	-1.03
THERMAL PO	3.51	0.00	-3.51	20.92	0.00	-20.92	10.79	1.87	8.92	-15.51
ILF&S	0.00	0.00	0.00	1.11	0.00	-1.11	7.33	0.80	6.52	5.41
NLC	0.00	0.00	0.00	91.73	0.00	-91.73	11.98	47.98	-36.00	-127.74
SEMBCORP	576.05	0.00	-576.05	105.88	0.00	-105.88	16.42	3.63	12.79	-669.14
NETCL VALLUR	0.00	0.00	0.00	0.00	0.00	0.00	19.88	0.81	19.06	19.06
NTPC -ER	0.00	0.00	0.00	6.18	0.00	-6.18	40.63	20.95	19.68	13.50
MAITHON POW	0.00	0.00	0.00	0.59	0.00	-0.59	4.40	2.00	2.40	1.80
ADHUNIK POW	101.69	0.00	-101.69	0.00	0.00	0.00	0.48	1.52	-1.03	-102.72
CHUZACHEN HE	0.00	0.00	0.00	12.06	0.00	-12.06	0.64	0.89	-0.25	-12.32
GMR KAMALANG	0.74	0.00	-0.74	2.64	0.00	-2.64	4.20	10.55	-6.36	-9.74
JITPL	22.72	0.00	-22.72	29.33	0.00	-29.33	2.01	6.26	-4.25	-56.30
TEESTA HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.24	8.44	-8.20	-8.20
DAGACHU	27.36	0.00	-27.36	0.00	0.00	0.00	6.87	0.00	6.87	-20.50
JORETHANG	0.00	0.00	0.00	19.08	0.00	-19.08	4.45	1.53	2.92	-16.16
NEPAL(NVVN)	0.00	75.05	75.05	0.00	0.00	0.00	77.32	12.34	64.98	140.03
BANGLADESH	0.00	87.26	87.26	0.00	0.00	0.00	5.22	2.56	2.66	89.92
TEESTA STG3	0.00	0.00	0.00	195.80	0.00	-195.80	3.57	2.42	1.15	-194.65
DIKCHU HEP	0.00	0.00	0.00	6.04	0.00	-6.04	0.02	0.26	-0.24	-6.28
TASHIDENG HEP	0.00	0.00	0.00	18.15	0.00	-18.15	1.79	1.25	0.53	-17.61
NTPC -NER	0.00	0.00	0.00	8.95	0.00	-8.95	0.00	0.00	0.00	-8.95
NEEPCO	0.00	0.00	0.00	0.00	0.00	0.00	1.57	9.28	-7.71	-7.71
ONGC PALATAN	48.36	0.00	-48.36	2.17	0.00	-2.17	0.00	0.00	0.00	-50.53
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 January, 2018**



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



<b>Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs) TRANSACTED THROUGH POWER EXCHANGES, DECEMBER 2017</b>			
<b>Sr.No.</b>	<b>Details of REC Transactions</b>	<b>IEX</b>	<b>PXIL</b>
		<b>Non-Solar</b>	<b>Non Solar</b>
A	Volume of Buy Bid	3239142	1978047
B	Volume of Sell Bid	7027931	3401083
C	Ratio of Buy Bid to Sell Bid Volume	0.46	0.58
D	Market Clearing Volume (MWh)	3239142	1978047
E	Market Clearing Price (₹/MWh)	1500	1500

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

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