

Monthly Report on Short-term Transactions of Electricity in India

January, 2019



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



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 Underdrawal 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	31
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 February, 2019	30
Figure-8	Forward Curve based on Prices of Bilateral Contracts	30

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
BRBCL	Bhartiya Rail Bijlee 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
IL&FS	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
LANCO 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
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 Stage 3 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 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 **January, 2019** are as under:

I: Volume of Short-term Transactions of Electricity

During January 2019, total electricity generation excluding generation from renewable and captive power plants in India was 100359.11 MUs (Table-1).

Of the total electricity generation, 10426.98 MUs (10.39%) was transacted through short-term, comprising of 4797.28 MUs (4.78%) through bilateral (through traders and term-ahead contracts on power exchanges and directly between distribution companies), followed by 3280.86 MUs (3.27%) through day ahead collective transactions on power exchanges and 2348.85 MUs (2.34%) through DSM (Table-1 & Figure-2).

Of the total short-term transactions, bilateral constitutes 46.01% (32.68% through traders and term-ahead contracts on power exchanges and 13.32% directly between distribution companies) followed by 31.47% through day ahead collective transactions on power exchanges and 22.53% 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 37 trading licensees as on January, 2019. In January, 2019, 22 trading licensees were engaged in short term trading. Top 5 trading licensees had a share of 73.01% in the total volume traded by all the licensees. These are PTC India Ltd., Arunachal Pradesh Power Corporation (P) Ltd, Manikaran Power Ltd., Mittal Processors (P) Ltd. and GMR Energy Trading 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 0.1417 for the month of January, 2019, which indicates non-concentration of market power (Table-2).

The volume of electricity transacted through IEX in the day ahead market was 3280.86 MUs. There were no transactions in PXIL. The volume of total buy bids and sell bids was 4863.87 MUs and 7651.55 MUs respectively in IEX while the same was 7.05 MUs and 38.55 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 102.08 MUs and 79.21 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 ₹1.96/kWh, ₹6.50/kWh and ₹4.44/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 ₹4.65/kWh, ₹6.50/kWh and ₹3.79/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. The minimum, maximum and weighted average prices were ₹1.50/kWh, ₹7.81/kWh and ₹3.63/kWh respectively (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹4.27/kWh and ₹4.07/kWh respectively (Table-6 and Table-7).

(iii) Price of electricity transacted through DSM: The average deviation settlement price was ₹3.48/kWh. The minimum and maximum deviation settlement prices were ₹0.00/kWh and ₹8.00/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 63.37% of the volume, and these were Punjab, Haryana, Delhi, West Bengal and Uttar Pradesh. Top 5 regional entities purchased 59.48% of the volume, and these were Madhya Pradesh, Andhra Pradesh, Jammu and Kashmir, Himachal Pradesh and Uttarakhand (Table-9& 10).

Of the total power exchange transactions, top 5 regional entities sold 39.53% of the volume, and these were Sembcorp Gayatri Power Ltd., Maharashtra, Madhya Pradesh, Delhi and Diligent Power Pvt. Ltd. Top 5 regional entities purchased 45.41% of the volume, and these were Tamil Nadu, Telangana, West Bengal, Gujarat and Maharashtra (Table-11 & 12).

Of the total DSM transactions, top 5 regional entities underdrew 27.86% of the volume, and these were Andhra Pradesh, Rajasthan, Gujarat, Madhya Pradesh and Haryana (Table-

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.

13). Top 5 regional entities overdrew 24.58% of the volume, and these were NTPC Station (Western Region), Rajasthan, Tamil Nadu, Uttar Pradesh and Punjab (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 Punjab, Haryana, Delhi, Sembcorp Gayatri Power Ltd. and Essar Power Ltd. Top 5 electricity purchasing regional entities were Andhra Pradesh, Jammu and Kashmir, Madhya Pradesh, Tamil Nadu and Himachal 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 January 2019, 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.

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.

During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.19% of the unconstrained cleared volume. In terms of time, congestion occurred was 5.65% in IEX (Table-16). There was no volume traded on PXIL, hence, no congestion in PXIL.

V: Bilateral Contracts executed by Traders

The above sections covered an analysis on short-term transactions of electricity in January, 2019. This section covers an analysis of bilateral contracts executed in February, 2019.

(i) Duration of bilateral contracts: During February 2019, a total of 64 bilateral contracts (excluding banking/swap contracts) have been executed by traders for the volume of 1020.45 MUs. Figure-7 shows the percentage of contracts categorized according to the period of power supply. It can be observed from the figure that 54.7% of the bilateral contracts were executed for duration of up to one week, 45.3% of the contracts were executed for duration of more than a week and up to one month, while no contracts were executed for duration of more than one month.

During the month, 23 banking/swapping bilateral contracts were also executed for the volume of 818.15 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 1st February, 2019 to 27th May, 2019 based on the bilateral contracts⁴ executed till February, 2019. Forward curves have been drawn for the contracts executed in January, 2019 and February, 2019 for the purpose of comparison. It is observed that forward contract prices are

⁴Excluding Banking/Swapping contracts

higher for the contracts executed in February, 2019 compared to the contracts executed in January, 2019 during the period 1st April 2019 – 27th May 2019.

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 April, 2011.

The details of REC transactions for the month of January, 2019 are shown in Table-20. The market clearing volume of solar RECs transacted on IEX and PXIL were 97277 and 21249 respectively and the market clearing price of these RECs was ₹1750/MWh in IEX and ₹1500/MWh in PXIL. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 393316 and 98574 respectively and the weighted average market clearing price of these RECs was ₹1500/MWh in IEX and ₹1501/MWh in PXIL.

The gap between the volume of buy and sell bids of RECs placed through power exchanges shows about the variation in demand for both solar and non-solar RECs. For Solar RECs, the ratio of buy bids to sell bids was 2.44 and 0.85 in IEX and PXIL respectively. For non-solar RECs, the ratio of buy bids to sell bids was 1.69 and 2.51 in IEX and PXIL respectively.

VII: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 10.39%.
- Of the total short-term transactions, bilateral constitutes 46.01% (32.68% through traders and term-ahead contracts on power exchanges and 13.32% directly between distribution companies) followed by 31.47% through day ahead collective transactions on power exchanges and 22.53% through DSM
- Top 5 trading licensees had a share of 73.01% 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 0.1417, indicating non-concentration of market power.
- The weighted average price of electricity transacted through trading licensees was ₹4.44/kWh. The weighted average price of electricity transacted through IEX was ₹3.63/kWh. There were no transactions in PXIL.
- The average price of electricity transacted through DSM was ₹3.48/kWh.
- Top 5 electricity selling regional entities were Punjab, Haryana, Delhi, Sembcorp Gayatri Power Ltd. and Essar Power Ltd. Top 5 electricity purchasing regional entities were Andhra Pradesh, Jammu and Kashmir, Madhya Pradesh, Tamil Nadu and Himachal Pradesh.
- During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.19% of the unconstrained cleared volume. In terms of time, congestion occurred was 5.65% in IEX. There was no volume traded on PXIL, hence, no congestion in PXIL.
- In February 2019, 54.7% of the bilateral contracts were executed for duration of up to one week, 45.3% of the contracts were executed for duration of more than a week and up to one month, while no contracts were executed for duration of more than one month.

- The forward curve of electricity sale prices for the period from 1st February, 2019 to 27th May, 2019 based on the bilateral contracts⁵ executed till February, 2019 shows that forward contract prices are higher for the contracts executed in February, 2019 compared to the contracts executed in January, 2019 during the period 1st April 2019– 27th May, 2019.
- The market clearing volume of solar RECs transacted on IEX and PXIL were 97277 and 21249 respectively and the market clearing price of these RECs was ₹1750/MWh in IEX and ₹1500/MWh in PXIL. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 393316 and 98574 respectively and the weighted average market clearing price of these RECs was ₹1500/MWh in IEX and ₹1501/MWh in PXIL.

⁵*Excluding Banking/Swapping contracts*

Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), JANUARY 2019				
Sr.No	Short-term transactions	Volume (MUs)	% to Volume of short-term transactions	% to Total Generation
1	Bilateral	4797.28	46.01	4.78
	(i) Through Traders and PXs	3408.01	32.68	3.40
	(ii) Direct	1389.27	13.32	1.38
2	Through Power Exchanges	3280.86	31.47	3.27
	(i) IEX	3280.86	31.47	3.27
	(ii) PXIL	0.00	0.00	0.00
3	Through DSM	2348.85	22.53	2.34
	Total	10426.98	-	10.39
	Total Generation	100359.11	-	-

Source: NLDC

Figure-1: Volume of Short-term Transactions of Electricity, January 2019

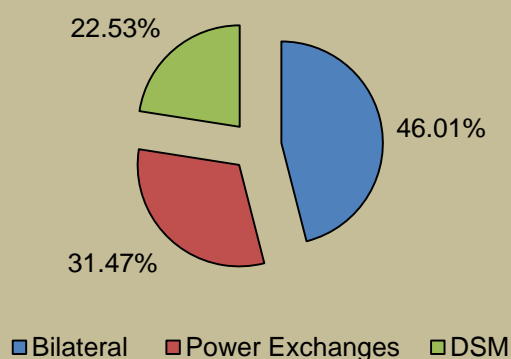
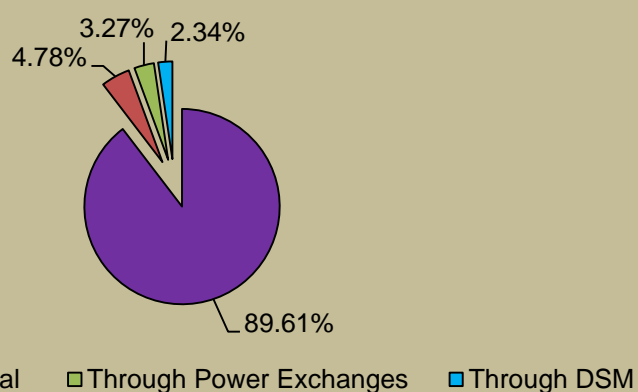


Figure-2: Volume of Various Kinds of Electricity Transactions in Total Electricity Generation, January 2019



**Figure-3: Volume of Short-term Transactions of Electricity,
January 2019 (Day-wise)**

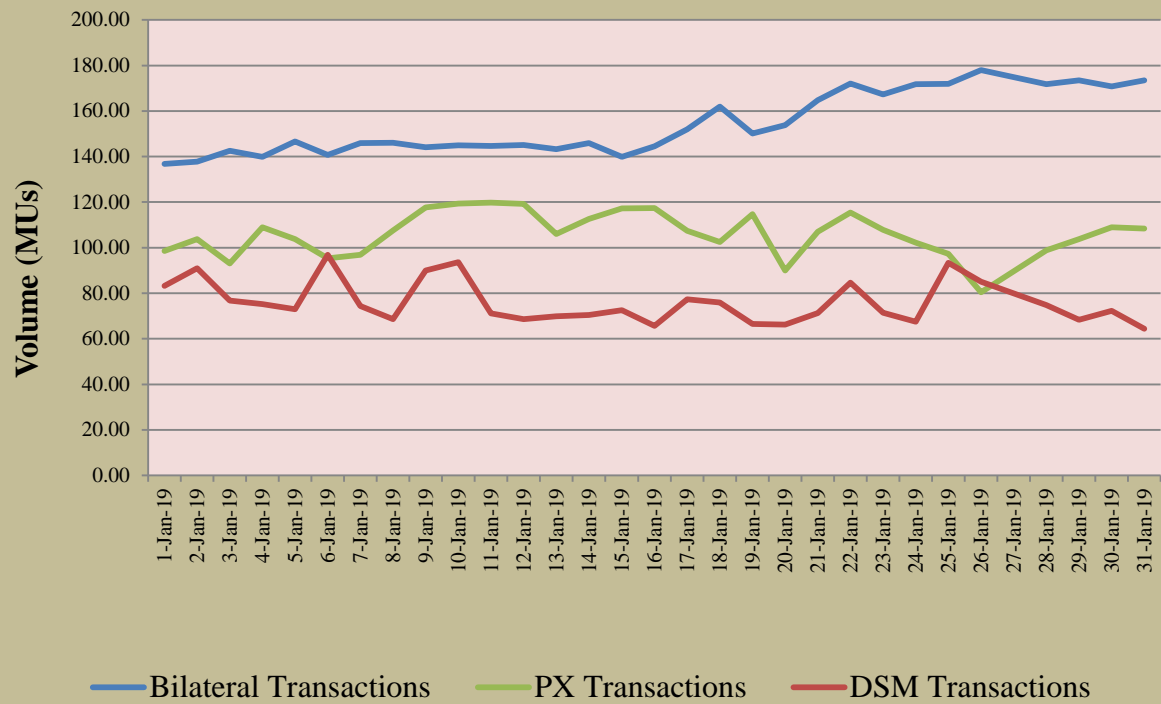


Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, JANUARY 2019			
Sr.No	Name of the Trading Licensee	% Share in total Volume transacted by Trading Licensees	Herfindahl-Hirschman Index
1	PTC India Ltd.	26.71	0.0714
2	Arunachal Pradesh Power Corporation (P) ltd	17.13	0.0293
3	Manikaran Power Ltd.	10.64	0.0113
4	Mittal Processors (P) Ltd.	10.52	0.0111
5	GMR Energy Trading Ltd.	8.01	0.0064
6	NTPC Vidyut Vyapar Nigam Ltd.	7.50	0.0056
7	Tata Power Trading Company (P) Ltd.	5.18	0.0027
8	Adani Enterprises Ltd.	4.73	0.0022
9	Jaiprakash Associates Ltd.	3.09	0.0010
10	JSW Power Trading Company Ltd	1.77	0.0003
11	Knowledge Infrastructure Systems (P) Ltd	1.50	0.0002
12	RPG Power Trading Company Ltd.	0.77	0.0001
13	Essar Electric Power Development Corp. Ltd.	0.61	0.0000
14	Instinct Infra & Power Ltd.	0.60	0.0000
15	National Energy Trading & Services Ltd.	0.38	0.0000
16	Statkraft Markets Pvt. Ltd.	0.28	0.0000
17	Gita Power & Infrastructure Private Limited	0.18	0.0000
18	Shree Cement Ltd.	0.16	0.0000
19	Customized Energy Solutions India (P) Ltd.	0.12	0.0000
20	Abja Power Private Limited	0.09	0.0000
21	Phillip Commodities India (P) Ltd.	0.01	0.0000
22	IPCL Power Trading Pvt. Ltd.	0.01	0.0000
TOTAL		100.00%	0.1417
Top 5 trading licensees		73.01%	
<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 is not included.</i>			
<i>Source: Information submitted by trading licensees</i>			

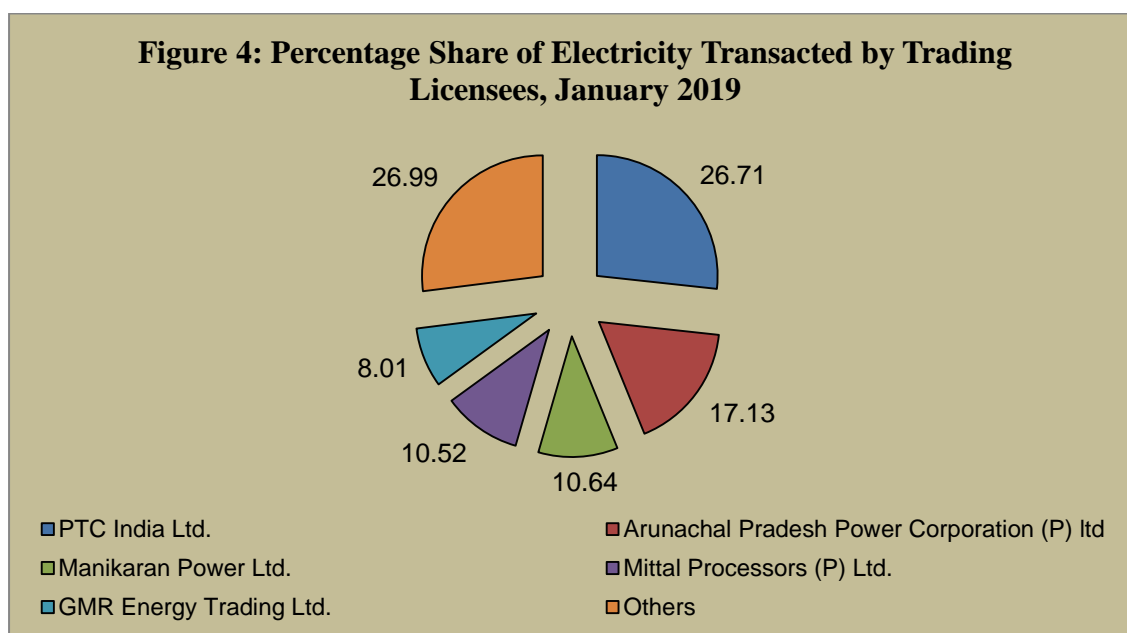


Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, JANUARY 2019		
Sr.No	Item	Sale Price of Traders (₹/kWh)
1	Minimum	1.96
2	Maximum	6.50
3	Weighted Average	4.44

Source: Information submitted by trading licensees

Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), JANUARY 2019		
Sr.No	Period of Trade	Sale Price of Traders (₹/kWh)
1	RTC	4.65
2	PEAK	6.50
3	OFF PEAK	3.79

Source: Information submitted by trading licensees

Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, JANUARY 2019			
Sr.No	ACP	Price in IEX (₹/kWh)	Price in PXIL (₹/kWh)
1	Minimum	1.50	-
2	Maximum	7.81	-
3	Weighted Average	3.63	-

Source: Information submitted by IEX and PXIL

Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, JANUARY 2019			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	21.66	4.36
2	Day Ahead Contingency Contracts	80.42	4.25
	Total	102.08	4.27

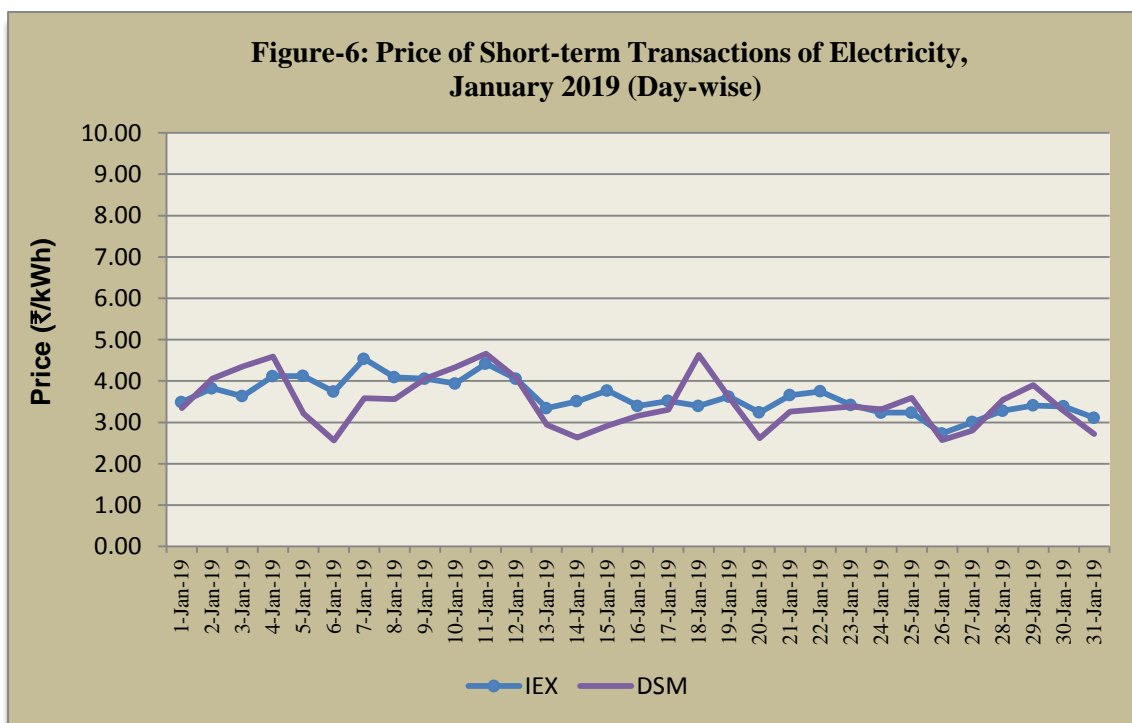
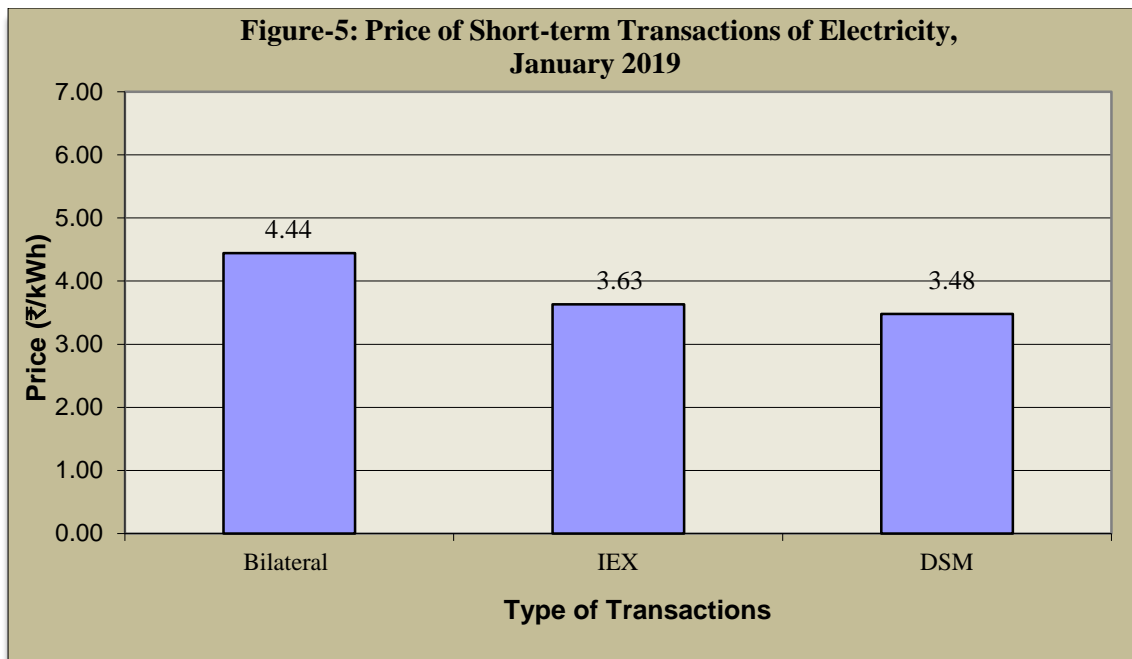
Source: IEX

Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, JANUARY 2019			
Sr.No	Term ahead contracts	Actual Scheduled Volume (MUs)	Weighted Average Price (₹/kWh)
1	Intra-Day Contracts	68.52	4.17
2	Any Day(s) Contracts	10.68	3.45
	Total	79.21	4.07

Source: PXIL

Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH DSM, JANUARY 2019		
Sr.No	Item	Price in All India Grid (₹/kWh)
1	Minimum	0.00
2	Maximum	8.00
3	Average	3.48

Source: NLDC



Note: There were no transactions in PXIL during January 2019.

Table-9: VOLUME OF ELECTRICITY SOLD THROUGH BILATERAL, JANUARY 2019		
Name of the Entity	Volume of Sale (MUs)	% of Volume
PUNJAB	1071.67	22.22
HARYANA	827.67	17.16
DELHI	558.50	11.58
WEST BENGAL	368.66	7.65
UTTAR PRADESH	229.29	4.76
ESSAR POWER	206.82	4.29
SEMBICORP	194.29	4.03
GUJARAT	177.98	3.69
CHHATTISGARH	156.24	3.24
ANDHRA PRADESH	148.36	3.08
ADHUNIK POWER LTD	130.49	2.71
SHREE CEMENT	91.15	1.89
JAYPEE NIGRIE	87.98	1.82
GMR CHATTISGARH	85.57	1.77
RAJASTHAN	68.09	1.41
JINDAL STAGE-II	51.67	1.07
ONGC PALATANA	47.98	1.00
HIMACHAL PRADESH	36.82	0.76
TELANGANA	36.66	0.76
MP	26.02	0.54
KARNATAKA	21.84	0.45
ODISHA	20.50	0.43
MB POWER	20.29	0.42
DVC	13.87	0.29
J & K	13.79	0.29
JHABUA POWER_MP	13.50	0.28
TASHIDENG HEP	11.59	0.24
MAHARASHTRA	10.43	0.22
DAGACHU	9.84	0.20
MEGHALAYA	9.78	0.20
JORETHANG	9.34	0.19
LANKO_AMK	9.18	0.19
TRN ENERGY	9.08	0.19
DB POWER	8.90	0.18
JITPL	7.37	0.15
KERALA	6.22	0.13
CHUZACHEN HEP	6.22	0.13
MANIPUR	4.65	0.10
GMR KAMALANGA	4.25	0.09
SKS POWER	3.37	0.07
COASTGEN	1.90	0.04
BIHAR	1.88	0.04
TAMIL NADU	1.15	0.02
ACBIL	0.76	0.02
TRIPURA	0.25	0.01
DADRA & NAGAR HAVELI	0.25	0.01
TOTAL	4822.12	100.00
Volume Sold by top 5 Regional Entities	3055.79	63.37

Table-10: VOLUME OF ELECTRICITY PURCHASED THROUGH BILATERAL, JANUARY 2019		
Name of the Entity	Volume of Purchase (MUs)	% of Volume
MP	742.97	15.49
ANDHRA PRADESH	696.42	14.52
J & K	515.27	10.74
HIMACHAL PRADESH	508.54	10.60
UTTARAKHAND	390.08	8.13
CHHATTISGARH	309.77	6.46
ESSAR STEEL	288.55	6.01
NEPAL(NVVN)	176.40	3.68
TELANGANA	164.49	3.43
JHARKHAND	118.05	2.46
GUJARAT	101.87	2.12
MEGHALAYA	99.16	2.07
UTTAR PRADESH	90.53	1.89
MAHARASHTRA	84.57	1.76
BANGLADESH	54.30	1.13
RAJASTHAN	52.84	1.10
ODISHA	51.80	1.08
WEST BENGAL	49.14	1.02
ASSAM	47.71	0.99
BIHAR	47.69	0.99
MANIPUR	47.67	0.99
HARYANA	43.47	0.91
GOA	38.84	0.81
DELHI	33.90	0.71
TAMIL NADU	23.22	0.48
DADRA & NAGAR HAVELI	13.68	0.29
SIKKIM	4.67	0.10
KARNATAKA	1.24	0.03
MIZORAM	0.25	0.01
TRIPURA	0.19	0.00
TOTAL	4797.28	100.00
Volume Purchased by top 5 Regional Entities	2853.28	59.48

Table-11: VOLUME OF ELECTRICITY SOLD THROUGH POWER EXCHANGES, JANUARY 2019		
Name of the Entity	Volume of Sale (MUs)	% of Volume
SEMBCORP	468.92	14.29
MAHARASHTRA	231.77	7.06
MP	220.15	6.71
DELHI	194.46	5.93
DB POWER	181.48	5.53
GUJARAT	127.78	3.89
TEESTA STG3	119.94	3.66
HIMACHAL PRADESH	105.16	3.21
TELANGANA	102.97	3.14
KARNATAKA	96.76	2.95
JAYPEE NIGRIE	95.30	2.90
ASSAM	82.36	2.51
DVC	82.25	2.51
MB POWER	81.46	2.48
TRIPURA	80.31	2.45
COASTGEN	72.14	2.20
RAJASTHAN	68.33	2.08
ANDHRA PRADESH	58.34	1.78
ODISHA	56.91	1.73
UTTARAKHAND	55.63	1.70
SPECTRUM	53.86	1.64
JINDAL STAGE-II	53.81	1.64
BIHAR	50.43	1.54
PUNJAB	48.18	1.47
NLC	43.67	1.33
ACBIL	32.52	0.99
HARYANA	32.21	0.98
NEEPCO STATIONS	31.58	0.96
ESSAR POWER	31.06	0.95
SKS POWER	29.94	0.91
GOA	23.99	0.73
CHHATTISGARH	22.36	0.68
SHREE CEMENT	20.39	0.62
NTPC STATIONS-NER	18.78	0.57
UTTAR PRADESH	17.95	0.55
MANIPUR	16.04	0.49
JINDAL POWER	13.81	0.42
JHABUA POWER_MP	13.06	0.40
KARCHAM WANGTOO	12.50	0.38
AD HYDRO	12.14	0.37
TAMIL NADU	11.73	0.36
SAINJ HEP	10.49	0.32
J & K	10.07	0.31
SIKKIM	9.38	0.29
KERALA	7.79	0.24
WEST BENGAL	7.25	0.22
DIKCHU HEP	7.15	0.22
CHANDIGARH	6.45	0.20
ONGC PALATANA	6.41	0.20
GMR KAMALANGA	5.96	0.18

MIZORAM	5.89	0.18
IL&FS	4.05	0.12
RANGANADI HEP	3.28	0.10
TRN ENERGY	2.80	0.09
JHARKHAND	2.79	0.09
DADRA & NAGAR HAVELI	2.00	0.06
MARUTI COAL	1.80	0.05
TASHIDENG HEP	1.71	0.05
ADHUNIK POWER LTD	1.60	0.05
ARUNACHAL PRADESH	1.54	0.05
BRBCL,NABINAGAR	1.50	0.05
JORETHANG	1.27	0.04
MEGHALAYA	1.20	0.04
PARE HEP	1.13	0.03
CHUZACHEN HEP	0.96	0.03
MALANA	0.82	0.02
LANCO BUDHIL	0.57	0.02
JITPL	0.55	0.02
DHARIWAL POWER	0.52	0.02
DOYANG HEP	0.48	0.01
GMR CHATTISGARH	0.43	0.01
NTPC STATIONS-NR	0.25	0.01
NTPC STATIONS-WR	0.23	0.01
NTPC STATIONS-SR	0.11	0.00
NTPC STATIONS-ER	0.03	0.00
TOTAL	3280.86	100.00
Volume sold by top 5 Regional Entities	1296.78	39.53

Table-12: VOLUME OF ELECTRICITY PURCHASED THROUGH POWER EXCHANGES, JANUARY 2019

Name of the Entity	Volume of Purchase (MUs)	% of Volume
TAMIL NADU	410.89	12.52
TELANGANA	370.02	11.28
WEST BENGAL	249.45	7.60
GUJARAT	239.59	7.30
MAHARASHTRA	219.77	6.70
ANDHRA PRADESH	213.44	6.51
RAJASTHAN	212.67	6.48
BIHAR	185.59	5.66
ODISHA	132.85	4.05
J & K	102.73	3.13
KARNATAKA	95.65	2.92
CHHATTISGARH	89.95	2.74
HARYANA	88.39	2.69
KERALA	85.56	2.61
UTTARAKHAND	70.48	2.15
DELHI	61.55	1.88
JHARKHAND	60.38	1.84
MP	55.95	1.71
DADRA & NAGAR HAVELI	54.59	1.66
UTTAR PRADESH	53.96	1.64
HIMACHAL PRADESH	51.13	1.56
DAMAN AND DIU	42.59	1.30
ESSAR STEEL	37.24	1.14
ASSAM	36.34	1.11
MEGHALAYA	27.89	0.85
PUNJAB	15.15	0.46
ARUNACHAL PRADESH	4.88	0.15
CHANDIGARH	4.76	0.15
NAGALAND	3.33	0.10
GOA	2.90	0.09
DVC	0.50	0.02
SIKKIM	0.38	0.01
MIZORAM	0.25	0.01
MANIPUR	0.08	0.00
TOTAL	3280.86	100.00
Volume purchased by top 5 Regional Entities	1489.72	45.41

Table-13: VOLUME OF ELECTRICITY UNDER DRAWAL (EXPORTED) THROUGH DSM, JANUARY 2019		
Name of the Entity	Volume of Underdrawal (MUs)	% of Volume
ANDHRA PRADESH	90.53	6.20
RAJASTHAN	89.75	6.15
GUJARAT	85.98	5.89
MP	70.89	4.86
HARYANA	69.58	4.77
MAHARASHTRA	67.21	4.60
UTTAR PRADESH	66.64	4.57
J & K	53.45	3.66
TAMIL NADU	53.04	3.63
TELANGANA	51.83	3.55
NTPC STATIONS-NR	51.72	3.54
SASAN UMPP	49.06	3.36
KARNATAKA	48.77	3.34
NTPC STATIONS-WR	46.47	3.18
NLC	37.55	2.57
BIHAR	34.83	2.39
NHPC STATIONS	30.94	2.12
WEST BENGAL	26.65	1.83
DELHI	26.60	1.82
ODISHA	25.69	1.76
NTPC STATIONS-ER	25.52	1.75
CHHATTISGARH	25.05	1.72
NTPC STATIONS-SR	24.69	1.69
UTTARAKHAND	23.76	1.63
DVC	23.55	1.61
ESSAR STEEL	23.14	1.58
HIMACHAL PRADESH	19.17	1.31
PUNJAB	14.16	0.97
KERALA	13.39	0.92
ASSAM	12.70	0.87
TRIPURA	11.28	0.77
CGPL	10.40	0.71
NEEPCO STATIONS	9.81	0.67
JHARKHAND	8.77	0.60
PONDICHERRY	8.63	0.59
GOA	7.83	0.54
MB POWER	7.63	0.52
MEGHALAYA	6.45	0.44
BANGLADESH	5.85	0.40
SIKKIM	5.66	0.39
EMCO	5.14	0.35
JINDAL STAGE-II	4.88	0.33
LANKO_AMK	3.94	0.27
CHANDIGARH	3.93	0.27
JAYPEE NIGRIE	3.88	0.27
RGPPL (DABHOL)	3.63	0.25
MIZORAM	3.22	0.22
TEESTA HEP	3.05	0.21
MANIPUR	3.03	0.21

JHABUA POWER_MP	2.82	0.19
SEMBICORP	2.79	0.19
DADRA & NAGAR HAVELI	2.69	0.18
JINDAL POWER	2.63	0.18
GMR KAMALANGA	2.48	0.17
NETCL VALLUR	2.46	0.17
THERMAL POWERTECH	2.44	0.17
NJPC	2.31	0.16
KARCHAM WANGTOO	2.31	0.16
DAMAN AND DIU	2.28	0.16
MAITHON POWER LTD	2.27	0.16
BRBCL,NABINAGAR	2.23	0.15
ESSAR POWER	2.12	0.15
URI-2	2.10	0.14
DB POWER	1.89	0.13
ACBIL	1.76	0.12
COASTGEN	1.69	0.12
KSK MAHANADI	1.58	0.11
TASHIDENG HEP	1.57	0.11
IL&FS	1.56	0.11
TRN ENERGY	1.41	0.10
NEPAL(NVVN)	1.29	0.09
NSPCL	1.19	0.08
RANGANADI HEP	1.15	0.08
JITPL	1.10	0.08
SHREE CEMENT	0.96	0.07
ADHUNIK POWER LTD	0.93	0.06
AD HYDRO	0.90	0.06
LOKTAK	0.90	0.06
JORETHANG	0.78	0.05
BALCO	0.76	0.05
NAGALAND	0.66	0.04
RKM POWER	0.65	0.04
GMR CHATTISGARH	0.59	0.04
SKS POWER	0.49	0.03
RANGIT HEP	0.44	0.03
DIKCHU HEP	0.40	0.03
DHARIWAL POWER	0.37	0.03
LANCO BUDHIL	0.35	0.02
DOYANG HEP	0.32	0.02
CHUZACHEN HEP	0.30	0.02
ARUNACHAL PRADESH	0.28	0.02
DCPP	0.13	0.01
MALANA	0.07	0.01
DAGACHU	0.00	0.00
TOTAL	1459.67	100.00
Volume Exported by top 5 Regional Entities	406.73	27.86

Table-14: VOLUME OF ELECTRICITY OVER DRAWAL (IMPORTED) THROUGH DSM, JANUARY 2019

Name of the Entity	Volume of Overdrawal (MUs)	% of Volume
NTPC STATIONS-WR	77.31	5.43
RAJASTHAN	76.00	5.34
TAMIL NADU	75.03	5.27
UTTAR PRADESH	62.15	4.37
PUNJAB	59.11	4.16
MAHARASHTRA	58.36	4.10
MP	56.16	3.95
NTPC STATIONS-NR	54.35	3.82
TELANGANA	53.78	3.78
NTPC STATIONS-ER	51.77	3.64
GUJARAT	49.12	3.45
KARNATAKA	45.91	3.23
JHARKHAND	38.79	2.73
NTPC STATIONS-SR	34.71	2.44
BIHAR	34.55	2.43
CHHATTISGARH	33.31	2.34
WEST BENGAL	32.09	2.26
DVC	30.53	2.15
J & K	30.17	2.12
ANDHRA PRADESH	29.90	2.10
HIMACHAL PRADESH	27.86	1.96
HARYANA	27.10	1.91
ODISHA	26.61	1.87
UTTARAKHAND	25.64	1.80
ESSAR STEEL	23.94	1.68
NHPC STATIONS	18.75	1.32
ARUNACHAL PRADESH	17.69	1.24
KERALA	17.68	1.24
DELHI	17.14	1.20
CHANDIGARH	13.83	0.97
CGPL	11.58	0.81
ASSAM	11.34	0.80
NEPAL(NVVN)	11.15	0.78
NLC	10.73	0.75
NETCL VALLUR	10.26	0.72
RGPL (DABHOL)	8.38	0.59
NAGALAND	7.68	0.54
DADRA & NAGAR HAVELI	7.65	0.54
GOA	6.73	0.47
DAMAN AND DIU	6.65	0.47
DB POWER	6.62	0.47
BALCO	6.37	0.45
DAGACHU	6.01	0.42
SKS POWER	5.90	0.41
PONDICHERRY	5.44	0.38
BANGLADESH	5.02	0.35
TRIPURA	4.48	0.31
JINDAL STAGE-II	4.46	0.31
COASTGEN	4.36	0.31
JHABUA POWER_MP	4.26	0.30

EMCO	3.97	0.28
MB POWER	3.61	0.25
GMR KAMALANGA	3.56	0.25
JAYPEE NIGRIE	3.41	0.24
MAITHON POWER LTD	3.25	0.23
LANKO_AMK	3.11	0.22
SEMBCORP	3.08	0.22
SHREE CEMENT	3.01	0.21
GMR CHATTISGARH	2.96	0.21
SASAN UMPP	2.75	0.19
TASHIDENG HEP	2.68	0.19
ACBIL	2.66	0.19
ESSAR POWER	2.62	0.18
BRBCL,NABINAGAR	2.54	0.18
MIZORAM	2.40	0.17
MEGHALAYA	2.40	0.17
MANIPUR	2.38	0.17
THERMAL POWERTECH	2.27	0.16
RKM POWER	2.19	0.15
ADHUNIK POWER LTD	2.03	0.14
NSPCL	1.91	0.13
RANGANADI HEP	1.71	0.12
NEEPCO STATIONS	1.65	0.12
JINDAL POWER	1.61	0.11
JITPL	1.47	0.10
SIKKIM	1.37	0.10
IL&FS	1.15	0.08
TRN ENERGY	1.11	0.08
JORETHANG	1.08	0.08
DGEN MEGA POWER	0.98	0.07
KSK MAHANADI	0.93	0.07
LANCO BUDHIL	0.80	0.06
TEESTA HEP	0.65	0.05
URI-2	0.61	0.04
KORBA WEST POWER	0.60	0.04
DHARIWAL POWER	0.58	0.04
AD HYDRO	0.52	0.04
LOKTAK	0.46	0.03
SIMHAPURI	0.38	0.03
MEENAKSHI	0.30	0.02
RANGIT HEP	0.29	0.02
DOYANG HEP	0.26	0.02
LANKO KONDAPALLI	0.25	0.02
MALANA	0.23	0.02
CHUZACHEN HEP	0.20	0.01
DCPP	0.14	0.01
TOTAL	1422.50	100.00
Volume Imported by top 5 Regional Entities	349.59	24.58

Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), JANUARY 2019		
Sr.No.	Name of the Entity	Total volume of net short-term transactions of electricity*
1	ANDHRA PRADESH	642.53
2	J & K	570.87
3	MP	538.02
4	TAMIL NADU	443.22
5	HIMACHAL PRADESH	426.39
6	UTTARAKHAND	406.80
7	TELANGANA	396.82
8	ESSAR STEEL	326.59
9	CHHATTISGARH	229.38
10	JHARKHAND	205.66
11	NEPAL(NVVN)	186.26
12	BIHAR	180.71
13	RAJASTHAN	115.34
14	MEGHALAYA	112.01
15	ODISHA	108.16
16	KERALA	75.85
17	DADRA & NAGAR HAVELI	70.98
18	BANGLADESH	53.47
19	MAHARASHTRA	53.29
20	DAMAN AND DIU	46.95
21	NTPC STATIONS-WR	30.60
22	MANIPUR	26.41
23	NTPC STATIONS-ER	26.22
24	ARUNACHAL PRADESH	20.75
25	GOA	16.65
26	NAGALAND	10.35
27	NTPC STATIONS-SR	9.92
28	CHANDIGARH	8.21
29	NETCL VALLUR	7.80
30	BALCO	5.60
31	RGPL (DABHOL)	4.75
32	NTPC STATIONS-NR	2.38
33	RKM POWER	1.54
34	CGPL	1.19
35	DGEN MEGA POWER	0.98
36	MAITHON POWER LTD	0.98
37	NSPCL	0.73
38	PARE HEP	-1.13
39	EMCO	-1.16
40	GUJARAT	-1.16
41	BRBCL,NABINAGAR	-1.19
42	URI-2	-1.49
43	MARUTI COAL	-1.80
44	NJPC	-2.31
45	TEESTA HEP	-2.40
46	RANGANADI HEP	-2.72
47	PONDICHERRY	-3.19
48	DAGACHU	-3.83
49	IL&FS	-4.46
50	MIZORAM	-6.21

51	CHUZACHEN HEP	-7.27
52	JITPL	-7.55
53	DIKCHU HEP	-7.56
54	SIKKIM	-8.61
55	GMR KAMALANGA	-9.13
56	LANKO_AMK	-10.01
57	JORETHANG	-10.30
58	SAINJ HEP	-10.49
59	TRN ENERGY	-12.18
60	TASHIDENG HEP	-12.19
61	NHPC STATIONS	-12.19
62	AD HYDRO	-12.51
63	KARCHAM WANGTOO	-14.81
64	JINDAL POWER	-14.83
65	NTPC STATIONS-NER	-18.78
66	KARNATAKA	-24.57
67	JHABUA POWER_MP	-25.12
68	SKS POWER	-27.90
69	ACBIL	-32.37
70	NEEPCO STATIONS	-39.74
71	SASAN UMPP	-46.31
72	SPECTRUM	-53.86
73	ONGC PALATANA	-54.39
74	NLC	-70.49
75	COASTGEN	-71.37
76	WEST BENGAL	-71.88
77	GMR CHATTISGARH	-83.63
78	TRIPURA	-87.18
79	DVC	-88.64
80	MB POWER	-105.77
81	JINDAL STAGE-II	-105.90
82	UTTAR PRADESH	-107.24
83	SHREE CEMENT	-109.49
84	TEESTA STG3	-119.94
85	ADHUNIK POWER LTD	-130.98
86	JAYPEE NIGRIE	-183.75
87	DB POWER	-185.65
88	ESSAR POWER	-237.38
89	SEMBCORP	-662.92
90	DELHI	-666.98
91	HARYANA	-770.49
92	PUNJAB	-1059.75

** 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, JANUARY 2019		
	Details of Congestion	IEX
A	Unconstrained Cleared Volume* (MUs)	3287.27
B	Actual Cleared Volume and hence scheduled (MUs)	3280.86
C	Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)	6.41
D	Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume	0.19%
E	Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month)	5.65%
F	Congestion occurrence (%) time block wise	
	0.00 - 6.00 hours	2.98%
	6.00 - 12.00 hours	30.95%
	12.00 - 18.00 hours	33.93%
	18.00 - 24.00 hours	32.14%
<i>* This power would have been scheduled had there been no congestion.</i>		
<i>Source: IEX & PXIL& NLDC</i>		
<i>Note: There were no transactions in PXIL, hence, no congestion.</i>		

Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA (DAY-WISE) (MUs), JANUARY 2019						
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-Jan-19	99.53	37.20	98.55	0.00	83.27	3221.05
2-Jan-19	99.55	38.22	103.78	0.00	91.01	3255.41
3-Jan-19	102.27	40.29	93.05	0.00	76.72	3295.64
4-Jan-19	100.39	39.46	108.91	0.00	75.29	3333.65
5-Jan-19	103.77	42.84	103.70	0.00	72.97	3286.08
6-Jan-19	100.67	40.00	95.39	0.00	96.81	3135.87
7-Jan-19	104.63	41.27	96.82	0.00	74.38	3205.58
8-Jan-19	105.01	41.04	107.50	0.00	68.67	3305.04
9-Jan-19	102.92	41.25	117.71	0.00	90.01	3293.38
10-Jan-19	103.32	41.63	119.33	0.00	93.60	3325.25
11-Jan-19	102.60	42.09	119.73	0.00	71.15	3358.63
12-Jan-19	104.35	40.67	119.23	0.00	68.57	3345.47
13-Jan-19	102.69	40.57	105.96	0.00	69.93	3199.44
14-Jan-19	106.01	39.91	112.54	0.00	70.41	3120.77
15-Jan-19	104.10	35.78	117.24	0.00	72.55	3182.80
16-Jan-19	106.76	37.72	117.33	0.00	65.64	3255.01
17-Jan-19	110.31	41.66	107.44	0.00	77.36	3292.84
18-Jan-19	120.25	41.66	102.47	0.00	75.91	3340.04
19-Jan-19	108.81	41.30	114.68	0.00	66.50	3327.36
20-Jan-19	112.85	40.99	89.94	0.00	66.21	3193.80
21-Jan-19	123.83	40.91	107.02	0.00	71.32	3197.28
22-Jan-19	124.37	47.72	115.46	0.00	84.65	3174.58
23-Jan-19	112.49	54.77	107.79	0.00	71.43	3304.75
24-Jan-19	117.37	54.42	102.16	0.00	67.55	3255.04
25-Jan-19	117.38	54.50	97.30	0.00	93.36	3228.09
26-Jan-19	121.52	56.48	80.44	0.00	85.03	3018.37
27-Jan-19	115.69	56.06	98.79	0.00	74.86	3002.95
28-Jan-19	117.85	55.63	103.78	0.00	68.27	3154.96
29-Jan-19	116.40	54.35	108.99	0.00	72.23	3213.32
30-Jan-19	118.74	54.72	108.45	0.00	64.39	3264.71
31-Jan-19	121.56	54.18	99.37	0.00	68.78	3271.95
Total	3408.01	1389.27	3280.86	0.00	2348.85	100359.11
<i>Source: NLDC</i>						
<i>* Gross Electricity Generation excluding electricity generation from renewable and captive power plants.</i>						
<i>** The volume of bilateral through PXs represents the volume through term-ahead contracts.</i>						
<i># Area Clearing Volume represents the scheduled volume of all the bid areas.</i>						

Table-18: PRICE OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (DAY-WISE)(₹/kWh), JANUARY 2019									
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-Jan-19	1.50	5.25	3.49	-	-	-	0.00	8.00	3.35
2-Jan-19	1.71	6.56	3.82	-	-	-	0.00	8.00	4.05
3-Jan-19	1.75	5.05	3.63	-	-	-	0.00	8.00	4.35
4-Jan-19	1.83	6.28	4.12	-	-	-	0.00	8.00	4.59
5-Jan-19	1.75	7.00	4.12	-	-	-	0.00	8.00	3.22
6-Jan-19	1.80	5.50	3.74	-	-	-	0.00	8.00	2.56
7-Jan-19	1.78	6.91	4.53	-	-	-	0.00	8.00	3.58
8-Jan-19	1.83	7.08	4.09	-	-	-	0.00	7.46	3.56
9-Jan-19	1.50	7.50	4.05	-	-	-	0.00	8.00	4.06
10-Jan-19	1.50	7.50	3.94	-	-	-	0.00	8.00	4.33
11-Jan-19	1.50	7.50	4.42	-	-	-	0.00	8.00	4.66
12-Jan-19	1.55	7.81	4.05	-	-	-	0.00	8.00	4.07
13-Jan-19	1.75	4.70	3.34	-	-	-	0.00	7.70	2.94
14-Jan-19	1.55	5.12	3.51	-	-	-	0.00	7.70	2.63
15-Jan-19	1.82	5.10	3.77	-	-	-	0.00	8.00	2.92
16-Jan-19	1.75	4.80	3.40	-	-	-	0.00	7.40	3.16
17-Jan-19	1.50	5.42	3.52	-	-	-	0.00	7.70	3.31
18-Jan-19	1.75	4.99	3.40	-	-	-	0.00	8.00	4.63
19-Jan-19	1.75	5.60	3.62	-	-	-	0.00	8.00	3.60
20-Jan-19	1.50	4.80	3.24	-	-	-	0.00	7.07	2.62
21-Jan-19	1.50	5.50	3.66	-	-	-	0.00	8.00	3.26
22-Jan-19	1.80	5.50	3.75	-	-	-	0.00	8.00	3.32
23-Jan-19	1.84	4.94	3.42	-	-	-	0.00	8.00	3.38
24-Jan-19	1.76	4.60	3.24	-	-	-	0.00	8.00	3.32
25-Jan-19	1.80	4.50	3.23	-	-	-	0.00	7.69	3.59
26-Jan-19	1.50	3.70	2.73	-	-	-	0.00	8.00	2.57
27-Jan-19	1.50	5.65	3.01	-	-	-	0.00	8.00	2.80
28-Jan-19	1.50	5.65	3.28	-	-	-	0.00	8.00	3.55
29-Jan-19	1.60	5.20	3.41	-	-	-	0.00	8.00	3.90
30-Jan-19	1.50	5.00	3.39	-	-	-	0.00	7.40	3.28
31-Jan-19	1.75	4.70	3.11	-	-	-	0.00	6.75	2.72
	1.50	7.81	3.63	0.00	0.00	0.00	0.00	8.00	3.48
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), JANUARY 2019										
Name of the Entity	Through Bilateral			Through Power Exchange			Through DSM with Regional Grid			Total Net***
	Sale	Purchase	Net**	Sale	Purchase	Net**	Import (Over Drawl)	Export (Under Drawl)	Net**	
PUNJAB	1071.67	0.00	-1071.67	48.18	15.15	-33.03	59.11	14.16	44.95	-1059.75
HARYANA	827.67	43.47	-784.20	32.21	88.39	56.18	27.10	69.58	-42.47	-770.49
RAJASTHAN	68.09	52.84	-15.24	68.33	212.67	144.34	76.00	89.75	-13.76	115.34
DELHI	558.50	33.90	-524.60	194.46	61.55	-132.92	17.14	26.60	-9.46	-666.98
UP	229.29	90.53	-138.76	17.95	53.96	36.01	62.15	66.64	-4.49	-107.24
UTTARAKHAND	0.00	390.08	390.08	55.63	70.48	14.85	25.64	23.76	1.87	406.80
HP	36.82	508.54	471.72	105.16	51.13	-54.03	27.86	19.17	8.70	426.39
J & K	13.79	515.27	501.48	10.07	102.73	92.66	30.17	53.45	-23.27	570.87
CHANDIGARH	0.00	0.00	0.00	6.45	4.76	-1.69	13.83	3.93	9.90	8.21
MP	26.02	742.97	716.95	220.15	55.95	-164.20	56.16	70.89	-14.73	538.02
MAHARASHTRA	10.43	84.57	74.13	231.77	219.77	-12.00	58.36	67.21	-8.84	53.29
GUJARAT	177.98	101.87	-76.11	127.78	239.59	111.81	49.12	85.98	-36.87	-1.16
CHHATTISGARH	156.24	309.77	153.53	22.36	89.95	67.59	33.31	25.05	8.26	229.38
GOA	0.00	38.84	38.84	23.99	2.90	-21.10	6.73	7.83	-1.10	16.65
DAMAN AND DIU	0.00	0.00	0.00	0.00	42.59	42.59	6.65	2.28	4.36	46.95
DADRA & NAGAR	0.25	13.68	13.43	2.00	54.59	52.59	7.65	2.69	4.96	70.98
ANDHRA P	148.36	696.42	548.06	58.34	213.44	155.09	29.90	90.53	-60.63	642.53
KARNATAKA	21.84	1.24	-20.60	96.76	95.65	-1.11	45.91	48.77	-2.86	-24.57
KERALA	6.22	0.00	-6.22	7.79	85.56	77.78	17.68	13.39	4.30	75.85
TAMIL NADU	1.15	23.22	22.07	11.73	410.89	399.16	75.03	53.04	21.99	443.22
PONDICHERRY	0.00	0.00	0.00	0.00	0.00	0.00	5.44	8.63	-3.19	-3.19
TELANGANA	36.66	164.49	127.83	102.97	370.02	267.04	53.78	51.83	1.95	396.82
WEST BENGAL	368.66	49.14	-319.52	7.25	249.45	242.20	32.09	26.65	5.43	-71.88
ODISHA	20.50	51.80	31.30	56.91	132.85	75.94	26.61	25.69	0.92	108.16
BIHAR	1.88	47.69	45.82	50.43	185.59	135.17	34.55	34.83	-0.27	180.71
JHARKHAND	0.00	118.05	118.05	2.79	60.38	57.59	38.79	8.77	30.02	205.66
SIKKIM	0.00	4.67	4.67	9.38	0.38	-9.00	1.37	5.66	-4.29	-8.61
DVC	13.87	0.00	-13.87	82.25	0.50	-81.75	30.53	23.55	6.98	-88.64
ARUNACHAL P	0.00	0.00	0.00	1.54	4.88	3.34	17.69	0.28	17.41	20.75
ASSAM	0.00	47.71	47.71	82.36	36.34	-46.02	11.34	12.70	-1.37	0.33
MANIPUR	4.65	47.67	43.01	16.04	0.08	-15.96	2.38	3.03	-0.65	26.41
MEGHALAYA	9.78	99.16	89.38	1.20	27.89	26.69	2.40	6.45	-4.06	112.01
MIZORAM	0.00	0.25	0.25	5.89	0.25	-5.64	2.40	3.22	-0.82	-6.21
NAGALAND	0.00	0.00	0.00	0.00	3.33	3.33	7.68	0.66	7.02	10.35
TRIPURA	0.25	0.19	-0.06	80.31	0.00	-80.31	4.48	11.28	-6.81	-87.18
NTPC -NR	0.00	0.00	0.00	0.25	0.00	-0.25	54.35	51.72	2.63	2.38
NHPC STATIONS	0.00	0.00	0.00	0.00	0.00	0.00	18.75	30.94	-12.19	-12.19
NJPC	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.31	-2.31	-2.31
AD HYDRO	0.00	0.00	0.00	12.14	0.00	-12.14	0.52	0.90	-0.38	-12.51
KARCHAM WANGT	0.00	0.00	0.00	12.50	0.00	-12.50	0.00	2.31	-2.31	-14.81
SHREE CEMENT	91.15	0.00	-91.15	20.39	0.00	-20.39	3.01	0.96	2.05	-109.49
LANCO BUDHIL	0.00	0.00	0.00	0.57	0.00	-0.57	0.80	0.35	0.46	-0.11
MALANA	0.00	0.00	0.00	0.82	0.00	-0.82	0.23	0.07	0.16	-0.66
URI-2	0.00	0.00	0.00	0.00	0.00	0.00	0.61	2.10	-1.49	-1.49
SAINJ HEP	0.00	0.00	0.00	10.49	0.00	-10.49	0.00	0.00	0.00	-10.49
NTPC -WR	0.00	0.00	0.00	0.23	0.00	-0.23	77.31	46.47	30.83	30.60
JINDAL POWER	0.00	0.00	0.00	13.81	0.00	-13.81	1.61	2.63	-1.02	-14.83
LANCO_AMK	9.18	0.00	-9.18	0.00	0.00	0.00	3.11	3.94	-0.83	-10.01
NSPCL	0.00	0.00	0.00	0.00	0.00	0.00	1.91	1.19	0.73	0.73
ACBIL	0.76	0.00	-0.76	32.52	0.00	-32.52	2.66	1.76	0.90	-32.37
BALCO	0.00	0.00	0.00	0.00	0.00	0.00	6.37	0.76	5.60	5.60
RGPPL (DABHOL)	0.00	0.00	0.00	0.00	0.00	0.00	8.38	3.63	4.75	4.75
CGPL	0.00	0.00	0.00	0.00	0.00	0.00	11.58	10.40	1.19	1.19
EMCO	0.00	0.00	0.00	0.00	0.00	0.00	3.97	5.14	-1.16	-1.16
ESSAR STEEL	0.00	288.55	288.55	0.00	37.24	37.24	23.94	23.14	0.80	326.59

KSK MAHANADI	0.00	0.00	0.00	0.00	0.00	0.00	0.93	1.58	-0.65	-0.65
ESSAR POWER	206.82	0.00	-206.82	31.06	0.00	-31.06	2.62	2.12	0.49	-237.38
JINDAL STAGE-II	51.67	0.00	-51.67	53.81	0.00	-53.81	4.46	4.88	-0.42	-105.90
DB POWER	8.90	0.00	-8.90	181.48	0.00	-181.48	6.62	1.89	4.72	-185.65
DHARIWAL POWER	0.00	0.00	0.00	0.52	0.00	-0.52	0.58	0.37	0.20	-0.31
JAYPEE NIGRIE	87.98	0.00	-87.98	95.30	0.00	-95.30	3.41	3.88	-0.47	-183.75
DGEN MEGA POW	0.00	0.00	0.00	0.00	0.00	0.00	0.98	0.00	0.98	0.98
GMR CHATTISGAR	85.57	0.00	-85.57	0.43	0.00	-0.43	2.96	0.59	2.37	-83.63
KORBA WEST POW	0.00	0.00	0.00	0.00	0.00	0.00	0.60	0.00	0.60	0.60
MB POWER	20.29	0.00	-20.29	81.46	0.00	-81.46	3.61	7.63	-4.02	-105.77
MARUTI COAL	0.00	0.00	0.00	1.80	0.00	-1.80	0.00	0.00	0.00	-1.80
SPECTRUM	0.00	0.00	0.00	53.86	0.00	-53.86	0.00	0.00	0.00	-53.86
JHABUA POWER_N	13.50	0.00	-13.50	13.06	0.00	-13.06	4.26	2.82	1.44	-25.12
SASAN UMPP	0.00	0.00	0.00	0.00	0.00	0.00	2.75	49.06	-46.31	-46.31
TRN ENERGY	9.08	0.00	-9.08	2.80	0.00	-2.80	1.11	1.41	-0.30	-12.18
RKM POWER	0.00	0.00	0.00	0.00	0.00	0.00	2.19	0.65	1.54	1.54
SKS POWER	3.37	0.00	-3.37	29.94	0.00	-29.94	5.90	0.49	5.41	-27.90
NTPC -SR	0.00	0.00	0.00	0.11	0.00	-0.11	34.71	24.69	10.02	9.92
LANKO KONDAPAL	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.25	0.25
SIMHAPURI	0.00	0.00	0.00	0.00	0.00	0.00	0.38	0.00	0.38	0.38
MEENAKSHI	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.30	0.30
COASTGEN	1.90	0.00	-1.90	72.14	0.00	-72.14	4.36	1.69	2.67	-71.37
THERMAL POWER	0.00	0.00	0.00	0.00	0.00	0.00	2.27	2.44	-0.16	-0.16
IL&FS	0.00	0.00	0.00	4.05	0.00	-4.05	1.15	1.56	-0.41	-4.46
NLC	0.00	0.00	0.00	43.67	0.00	-43.67	10.73	37.55	-26.82	-70.49
SEMBCORP	194.29	0.00	-194.29	468.92	0.00	-468.92	3.08	2.79	0.29	-662.92
NETCL VALLUR	0.00	0.00	0.00	0.00	0.00	0.00	10.26	2.46	7.80	7.80
NTPC -ER	0.00	0.00	0.00	0.03	0.00	-0.03	51.77	25.52	26.25	26.22
MAITHON POWER	0.00	0.00	0.00	0.00	0.00	0.00	3.25	2.27	0.98	0.98
ADHUNIK POWER	130.49	0.00	-130.49	1.60	0.00	-1.60	2.03	0.93	1.10	-130.98
CHUZACHEN HEP	6.22	0.00	-6.22	0.96	0.00	-0.96	0.20	0.30	-0.10	-7.27
RANGIT HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.29	0.44	-0.14	-0.14
GMR KAMALANGA	4.25	0.00	-4.25	5.96	0.00	-5.96	3.56	2.48	1.07	-9.13
JITPL	7.37	0.00	-7.37	0.55	0.00	-0.55	1.47	1.10	0.37	-7.55
TEESTA HEP	0.00	0.00	0.00	0.00	0.00	0.00	0.65	3.05	-2.40	-2.40
DAGACHU	9.84	0.00	-9.84	0.00	0.00	0.00	6.01	0.00	6.01	-3.83
JORETHANG	9.34	0.00	-9.34	1.27	0.00	-1.27	1.08	0.78	0.30	-10.30
NEPAL(NVVN)	0.00	176.40	176.40	0.00	0.00	0.00	11.15	1.29	9.86	186.26
BANGLADESH	0.00	54.30	54.30	0.00	0.00	0.00	5.02	5.85	-0.83	53.47
TEESTA STG3	0.00	0.00	0.00	119.94	0.00	-119.94	0.00	0.00	0.00	-119.94
DIKCHU HEP	0.00	0.00	0.00	7.15	0.00	-7.15	0.00	0.40	-0.40	-7.56
TASHIDENG HEP	11.59	0.00	-11.59	1.71	0.00	-1.71	2.68	1.57	1.12	-12.19
BRBCL,NABINAGA	0.00	0.00	0.00	1.50	0.00	-1.50	2.54	2.23	0.31	-1.19
NTPC -NER	0.00	0.00	0.00	18.78	0.00	-18.78	0.00	0.00	0.00	-18.78
NEEPCO STATION	0.00	0.00	0.00	31.58	0.00	-31.58	1.65	9.81	-8.16	-39.74
RANGANADI HEP	0.00	0.00	0.00	3.28	0.00	-3.28	1.71	1.15	0.56	-2.72
DOYANG HEP	0.00	0.00	0.00	0.48	0.00	-0.48	0.26	0.32	-0.06	-0.54
ONGC PALATANA	47.98	0.00	-47.98	6.41	0.00	-6.41	0.00	0.00	0.00	-54.39
LOKTAK	0.00	0.00	0.00	0.00	0.00	0.00	0.46	0.90	-0.44	-0.44
PARE HEP	0.00	0.00	0.00	1.13	0.00	-1.13	0.00	0.00	0.00	-1.13

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 February, 2019

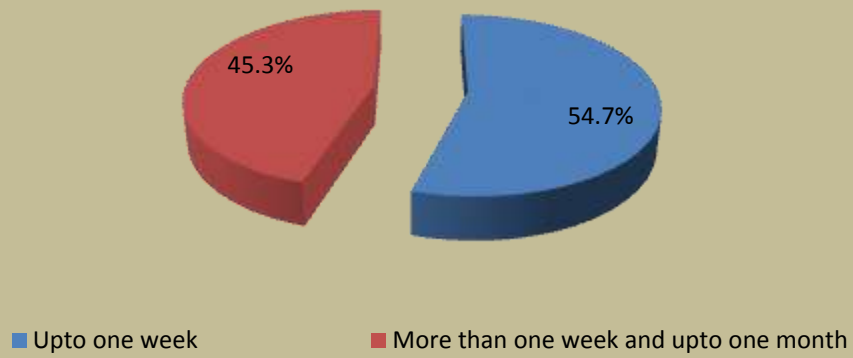


Figure-8: Forward Curve based on Prices of Bilateral Contracts

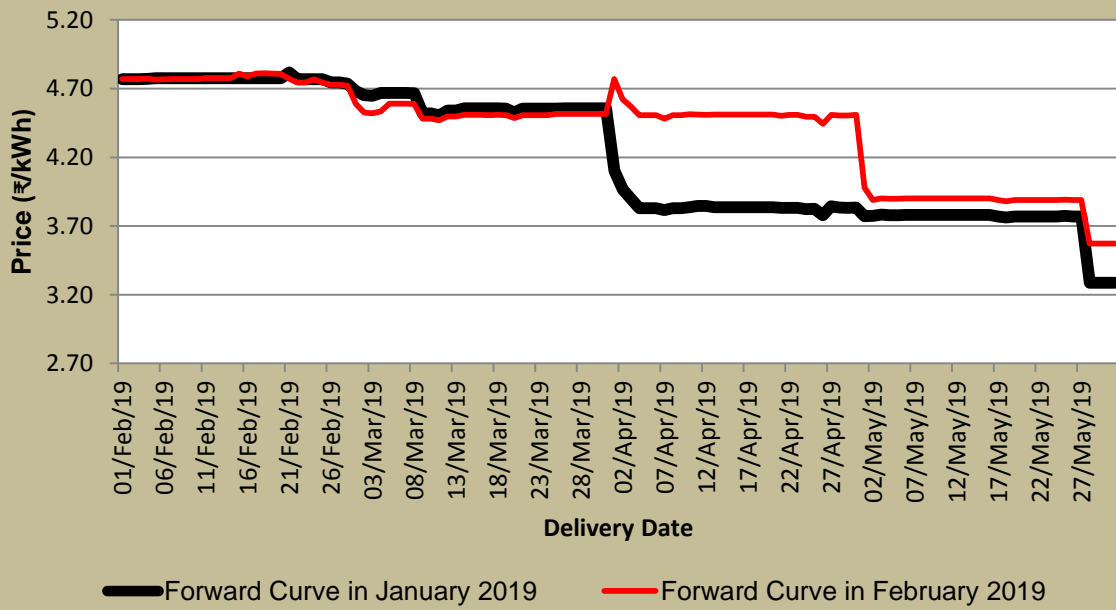


Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs) TRANSACTIONED THROUGH POWER EXCHANGES, JANUARY 2019					
Sr.No.	Details of REC Transactions	IEX		PXIL	
		Solar	Non-Solar	Solar	Non Solar
A	Volume of Buy Bid	589311	765770	102268	280078
B	Volume of Sell Bid	241580	453371	120687	111772
C	Ratio of Buy Bid to Sell Bid Volume	2.44	1.69	0.85	2.51
D	Market Clearing Volume (MWh)	97277	393316	21249	98574
E	Weighted average Market Clearing Price (₹/MWh)	1750	1500	1500	1501

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

Note 2: <i>Forbearance and Floor Price w.e.f 1st April 2017</i>		
Type of REC	Floor Price (₹/MWh)	Forbearance Price (₹/MWh)
<i>Solar</i>	<i>1000.00</i>	<i>2500.00</i>
<i>Non-Solar</i>	<i>1000.00</i>	<i>2900.00</i>