

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

January, 2018



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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                                      |
| LANCO 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 January 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, 2018** are as under:

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

During January 2018, total electricity generation excluding generation from renewable and captive power plants in India was 101202.97 MUs (Table-1).

Of the total electricity generation, 9689.53 MUs (9.57%) was transacted through short-term, comprising of 4611.68 MUs (4.56%) through bilateral (through traders and term-ahead contracts on power exchanges and directly between distribution companies), followed by 3375.23 MUs (3.34%) through day ahead collective transactions on power exchanges (IEX and PXIL) and 1702.62 MUs (1.68%) through DSM (Table-1 & Figure-2). There were no collective transactions in PXIL.

Of the total short-term transactions, bilateral constitutes 47.59% (30.22% through traders and term-ahead contracts on power exchanges and 17.38% directly between distribution companies) followed by 34.83% through day ahead collective transactions on power exchanges and 17.57% 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 January, 2018. In January, 2018, 22 trading licensees were engaged in short term trading. Top 5 trading licensees had a share of 77.44% in the total volume traded by all the licensees. These are PTC India Ltd., NTPC Vidyut Vyapar Nigam Ltd., Mittal Processor (P) Ltd., Manikaran Power Ltd. and Arunachal Pradesh Power Corp. 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 0.2025 for the month of January, 2018, which indicates moderate concentration of market power (Table-2).

The volume of electricity transacted through IEX in the day ahead market was 3375.23 MUs. The volume of total buy bids and sell bids was 4450.27 MUs and 6642.14 MUs respectively in IEX while the same was 6.98 MUs and 53.50 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 51.58 MUs and 35.39 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 ₹2.19/kWh, ₹6.40/kWh and ₹3.92/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 ₹4.18/kWh, ₹0.00/kWh, and ₹3.38/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 ₹1.50/kWh, ₹5.85/kWh and ₹3.44/kWh respectively in IEX. No trade happened in PXIL. (Table-5).

The price of electricity transacted through IEX and PXIL in the term-ahead market was ₹4.19/kWh and ₹3.75/kWh respectively (Table-6 and Table-7).

(iii) *Price of electricity transacted through DSM:* The average deviation settlement price was ₹2.12/kWh. The minimum and maximum deviation settlement prices were ₹0.00/kWh and ₹7.20/kWh respectively (Table-8).

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

### **III: Volume of Short-term Transactions of Electricity (Regional Entity<sup>1</sup>-Wise)**

Of the total bilateral transactions, top 5 regional entities sold 66.04% of the volume, and these were Punjab, Haryana, Delhi, Sembcorp Gayatri Power Ltd. and West Bengal. Top 5 regional entities purchased 52.15% of the volume, and these were Jammu & Kashmir, Tamil Nadu, Madhya Pradesh, Himachal Pradesh and Karnataka (Table-9 & 10).

Of the total power exchange transactions, top 5 regional entities sold 28.93% of the volume, and these were Diligent Power Pvt. Ltd., Damodar Valley Corporation, Madhya Pradesh, Telangana and TEESTA STG3 Hydro Power Project. Top 5 regional entities purchased 54.40% of the volume, and these were Gujarat, Maharashtra, Bihar, Karnataka and Rajasthan (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 28.44% of the volume, and these were NTPC Stations (Western region), Telangana, SKS Power, NTPC Stations (Northern region) and Sasan Ultra Mega Power Project (Table-13). Top 5 regional entities overdrew 30.04% of the volume, and these were Rajasthan, Uttar Pradesh, Tamil Nadu, Odisha 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 Punjab, Sembcorp Gayatri Power Ltd., Delhi, Haryana and Diligent Power Pvt. Ltd. Top 5 electricity purchasing regional entities were Jammu & Kashmir, Gujarat, Tamil Nadu, Karnataka and Uttarakhand.

#### **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 January 2018, 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

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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.

unconstrained cleared volume (volume of electricity that would have been scheduled, had there been no congestion) and actual cleared volume.

During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.34% of the unconstrained cleared volume. In terms of time, congestion occurred was 4.91% in IEX. There was no congestion in PXIL (Table-16).

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

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

**(i) Duration of bilateral contracts:** During February, 2018, a total of 77 bilateral contracts (excluding banking/swap contracts) have been executed by traders for the volume of 1746.53 MUs. Figure-7 shows the percentage of contracts categorized according to the period of power supply. It can be observed from the figure that 50.6% of the bilateral contracts were executed for duration of up to one week, 45.5% of the contracts were executed for duration of more than a week and up to one month, 1.3% of the contracts were executed for duration of more than a month and up to three months, while 2.6% of the contracts were executed for duration of more than three months and upto 12 months.

During the month, 19 banking/swapping bilateral contracts were also executed for the volume of 655.78 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> February, 2018 to 27<sup>th</sup> May, 2018 based on the bilateral contracts<sup>4</sup> executed till February, 2018. Forward curves have been drawn for the contracts executed in January, 2018 and February, 2018 for the purpose of comparison. It is observed that forward contract prices are significantly higher (for the period from 1<sup>st</sup> February 2018 to 26<sup>th</sup> February 2018) for the

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

contracts executed in February, 2018 compared to the contracts executed in January, 2018, after which, the prices of both the contracts have been moving together.

## **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 January, 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 January, 2018 are shown in Table-20. Market clearing volume of non-solar RECs transacted on IEX and PXIL were 1.82 lacs and 10.49 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 0.08 and 0.31 in IEX and PXIL respectively.

## VII: Inferences:

- The percentage of short-term transactions of electricity to total electricity generation was 9.57%.
- Of the total short-term transactions, bilateral constitutes 47.59% (30.22% through traders and term-ahead contracts on power exchanges and 17.38% directly between distribution companies) followed by 34.83% through day ahead collective transactions on power exchanges and 17.57% through DSM (Table-1 & Figure-1).
- There were no collective transactions in PXIL in January, 2018.
- Top 5 trading licensees had a share of 77.44% 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 0.20, indicating moderate concentration of market power.
- The weighted average price of electricity transacted through trading licensees was ₹3.92/kWh. The weighted average prices of electricity transacted through IEX was ₹3.44/kWh.
- The average price of electricity transacted through DSM was ₹2.12/kWh.
- Top 5 electricity selling regional entities were Punjab, Sembcorp Gayatri Power Ltd., Delhi, Haryana and Diligent Power Pvt. Ltd. Top 5 electricity purchasing regional entities were Jammu & Kashmir, Gujarat, Tamil Nadu, Karnataka and Uttarakhand.
- During the month, the volume of electricity that could not be cleared in IEX due to congestion was 0.34% of the unconstrained cleared volume. In terms of time, congestion occurred was 4.91% in IEX.
- In February, 2018, 50.6% of the bilateral contracts were executed for duration of up to one week, 45.5% of the contracts were executed for duration of more than a week and up to one month, 1.3% of the contracts were executed for duration of more than a month and up to three months, while 2.6% of the contracts were executed for duration of more than three months and upto 12 months.

- The forward curve of electricity sale prices for the period from 1<sup>st</sup> February, 2018 to 27<sup>th</sup> May, 2018 based on the bilateral contracts<sup>5</sup> executed till February, 2018 shows that forward contract prices are significantly higher (for the period from 1<sup>st</sup> February to 26<sup>th</sup> February 2018) for the contracts executed in February, 2018 compared to the contracts executed in January, 2018, after which, the prices of contracts in January and February have been moving together.
- Market clearing volume of non-solar RECs transacted on IEX and PXIL were 1.82 lacs and 10.49 lacs respectively and the market clearing price of these RECs was ₹1500/MWh on both the power exchanges.

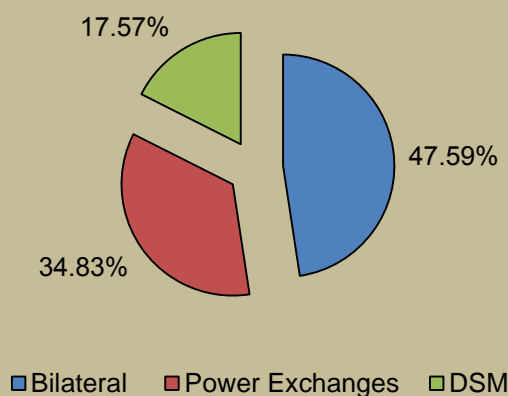
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<sup>5</sup>*Excluding Banking/Swapping contracts*

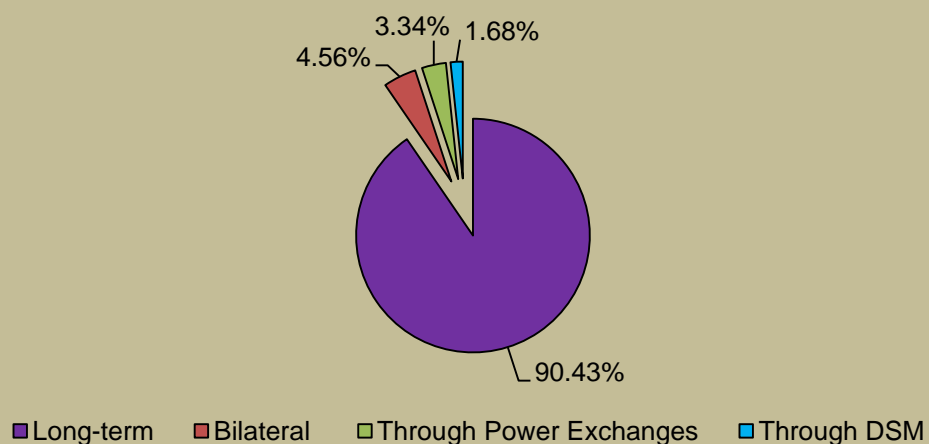
| Table-1: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (ALL INDIA), JANUARY 2018 |                             |                  |  |                       |
|---|-----------------------------|------------------|--|-----------------------|
| Sr.No   | Short-term transactions     | Volume (MUs)     | % to Volume of short-term transactions | % to Total Generation |
| 1   | Bilateral                   | 4611.68          | 47.59                                  | 4.56                  |
|   | (i) Through Traders and PXs | 2927.71          | 30.22                                  | 2.89                  |
|   | (ii) Direct                 | 1683.97          | 17.38                                  | 1.66                  |
| 2   | Through Power Exchanges     | 3375.23          | 34.83                                  | 3.34                  |
|   | (i) IEX                     | 3375.23          | 34.83                                  | 3.34                  |
|   | (ii) PXIL                   | 0.00             | 0.00                                   | 0.00                  |
| 3   | Through DSM                 | 1702.62          | 17.57                                  | 1.68                  |
|   | <b>Total</b>                | <b>9689.53</b>   | <b>-</b>                               | <b>9.57</b>           |
|   | <b>Total Generation</b>     | <b>101202.97</b> | <b>-</b>                               | <b>-</b>              |

Source: NLDC

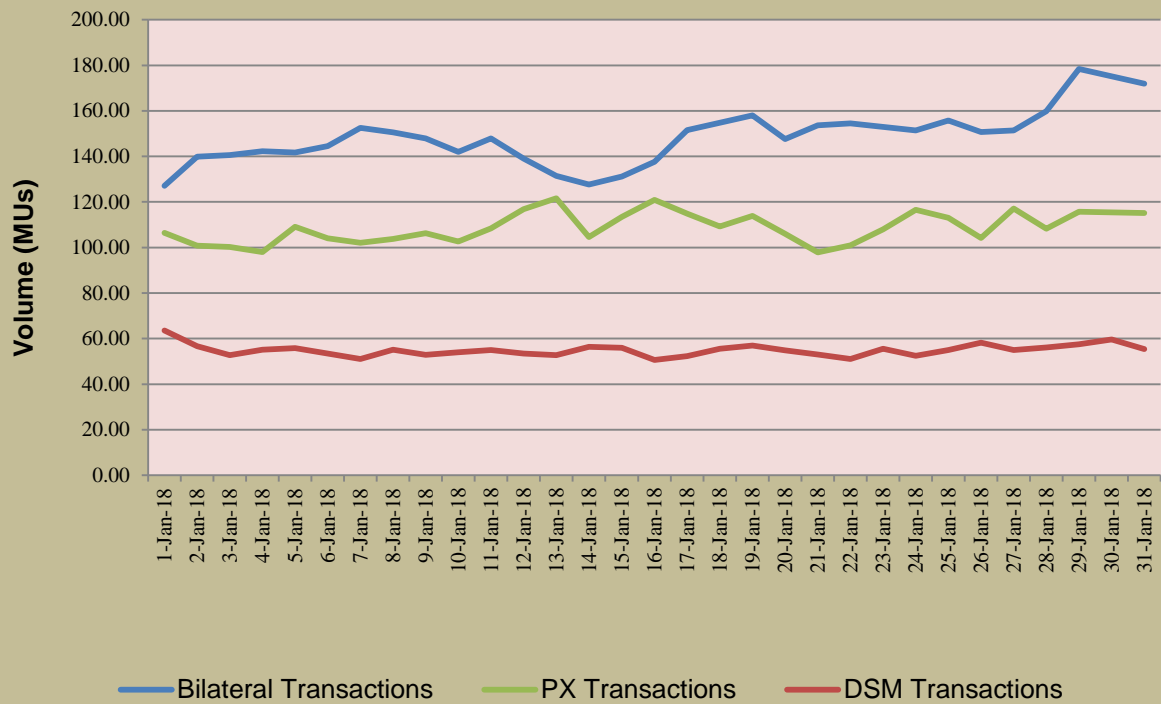
**Figure-1: Volume of Short-term Transactions of Electricity, January 2018**



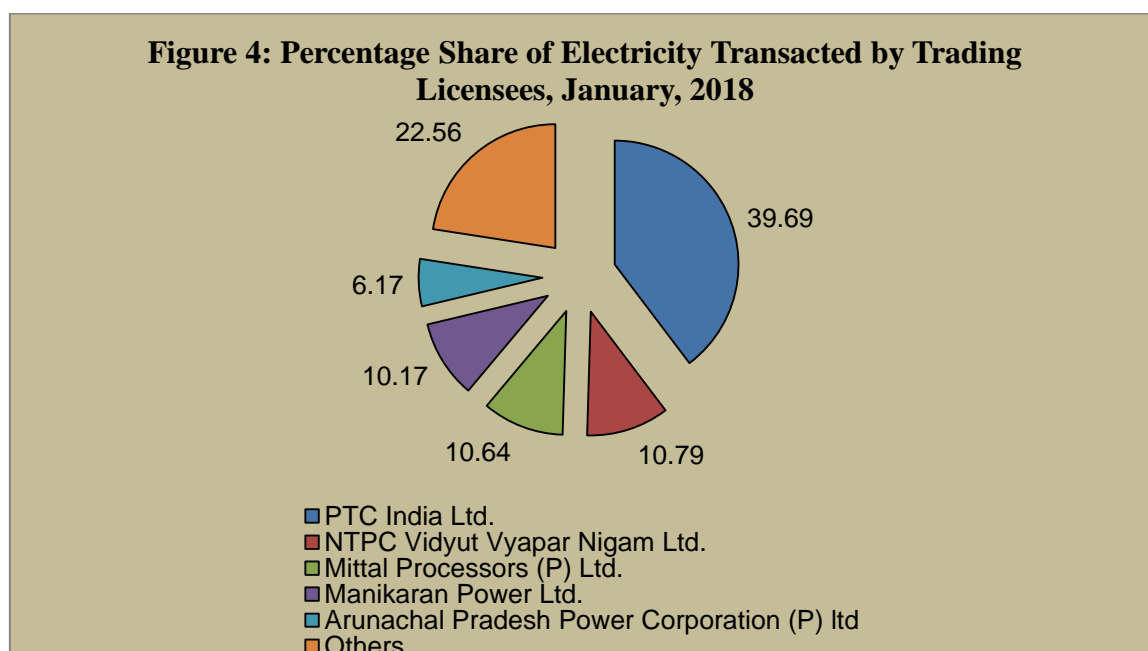
**Figure-2: Volume of Various Kinds of Electricity Transactions in Total Electricity Generation, January 2018**



**Figure-3: Volume of Short-term Transactions of Electricity,  
January 2018 (Day-wise)**



| <b>Table-2: PERCENTAGE SHARE OF ELECTRICITY TRANSACTED BY TRADING LICENSEES, JANUARY 2018</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.                              | 39.69  | 0.1575                            |
| 2   | NTPC Vidyut Vyapar Nigam Ltd.               | 10.79  | 0.0116                            |
| 3   | Mittal Processors (P) Ltd.                  | 10.64  | 0.0113                            |
| 4   | Manikaran Power Ltd.                        | 10.17  | 0.0103                            |
| 5   | Arunachal Pradesh Power Corporation (P) ltd | 6.17   | 0.0038                            |
| 6   | Tata Power Trading Company (P) Ltd.         | 5.77   | 0.0033                            |
| 7   | GMR Energy Trading Ltd.                     | 5.21   | 0.0027                            |
| 8   | Jaiprakash Associates Ltd.                  | 2.73   | 0.0007                            |
| 9   | Adani Enterprises Ltd.                      | 1.88   | 0.0004                            |
| 10  | JSW Power Trading Company Ltd               | 1.76   | 0.0003                            |
| 11  | National Energy Trading & Services Ltd.     | 1.47   | 0.0002                            |
| 12  | Knowledge Infrastructure Systems (P) Ltd    | 1.18   | 0.0001                            |
| 13  | RPG Power Trading Company Ltd.              | 0.76   | 0.0001                            |
| 14  | Customized Energy Solutions India (P) Ltd.  | 0.39   | 0.0000                            |
| 15  | Shree Cement Ltd.                           | 0.33   | 0.0000                            |
| 16  | Instinct Infra & Power Ltd.                 | 0.31   | 0.0000                            |
| 17  | Statkraft Markets Pvt. Ltd.                 | 0.31   | 0.0000                            |
| 18  | My Home Power Private Ltd.                  | 0.22   | 0.0000                            |
| 19  | Essar Electric Power Development Corp. Ltd. | 0.19   | 0.0000                            |
| 20  | Parshavanath Power Projects Private Limited | 0.01   | 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>0.2025</b>                     |
| <b>Top 5 trading licensees</b>  |   | <b>77.44%</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>   |   |  |                                   |





| <b>Table-3: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS, JANUARY 2018</b> |                  |                                      |
|---|------------------|--------------------------------------|
| <b>Sr.No</b>  | <b>Item</b>      | <b>Sale Price of Traders (₹/kWh)</b> |
| 1   | Minimum          | 2.19                                 |
| 2   | Maximum          | 6.40                                 |
| 3   | Weighted Average | 3.92                                 |

Source: Information submitted by trading licensees

| <b>Table-4: PRICE OF ELECTRICITY TRANSACTED THROUGH TRADERS (TIME-WISE), JANUARY 2018</b> |                        |                                      |
|---|------------------------|--------------------------------------|
| <b>Sr.No</b>  | <b>Period of Trade</b> | <b>Sale Price of Traders (₹/kWh)</b> |
| 1   | RTC                    | 4.18                                 |
| 2   | PEAK                   | 0.00                                 |
| 3   | OFF PEAK               | 3.38                                 |

Source: Information submitted by trading licensees

| <b>Table-5: PRICE OF ELECTRICITY TRANSACTED THROUGH POWER EXCHANGES, JANUARY 2018</b> |                  |                             |                              |
|---|------------------|-----------------------------|------------------------------|
| <b>Sr.No</b>  | <b>ACP</b>       | <b>Price in IEX (₹/kWh)</b> | <b>Price in PXIL (₹/kWh)</b> |
| 1   | Minimum          | 1.50                        | 0.00                         |
| 2   | Maximum          | 5.85                        | 0.00                         |
| 3   | Weighted Average | 3.44                        | 0.00                         |

Source: Information submitted by IEX and PXIL

| <b>Table-6: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF IEX, JANUARY 2018</b> |                                 |                                      |                                       |
|---|---------------------------------|--------------------------------------|---------------------------------------|
| <b>Sr.No</b>  | <b>Term ahead contracts</b>     | <b>Actual Scheduled Volume (MUs)</b> | <b>Weighted Average Price (₹/kWh)</b> |
| 1   | Intra-Day Contracts             | 33.44                                | 4.22                                  |
| 2   | Day Ahead Contingency Contracts | 18.15                                | 4.14                                  |
|   | <b>Total</b>                    | <b>51.58</b>                         | <b>4.19</b>                           |

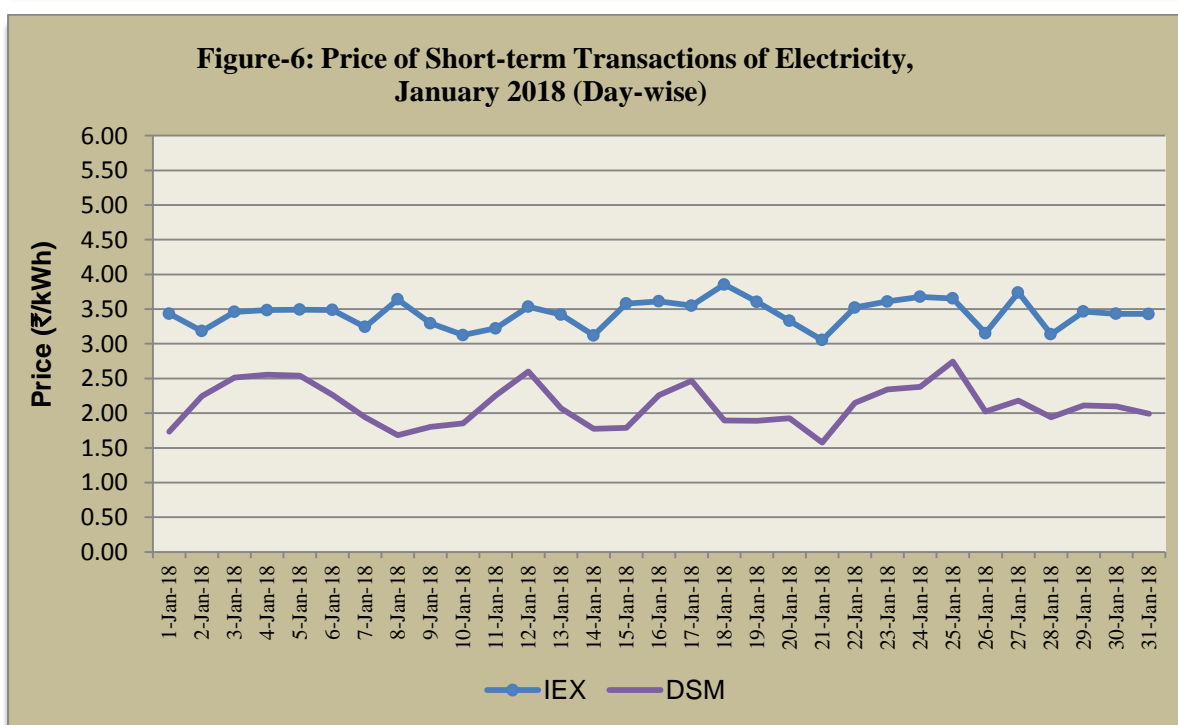
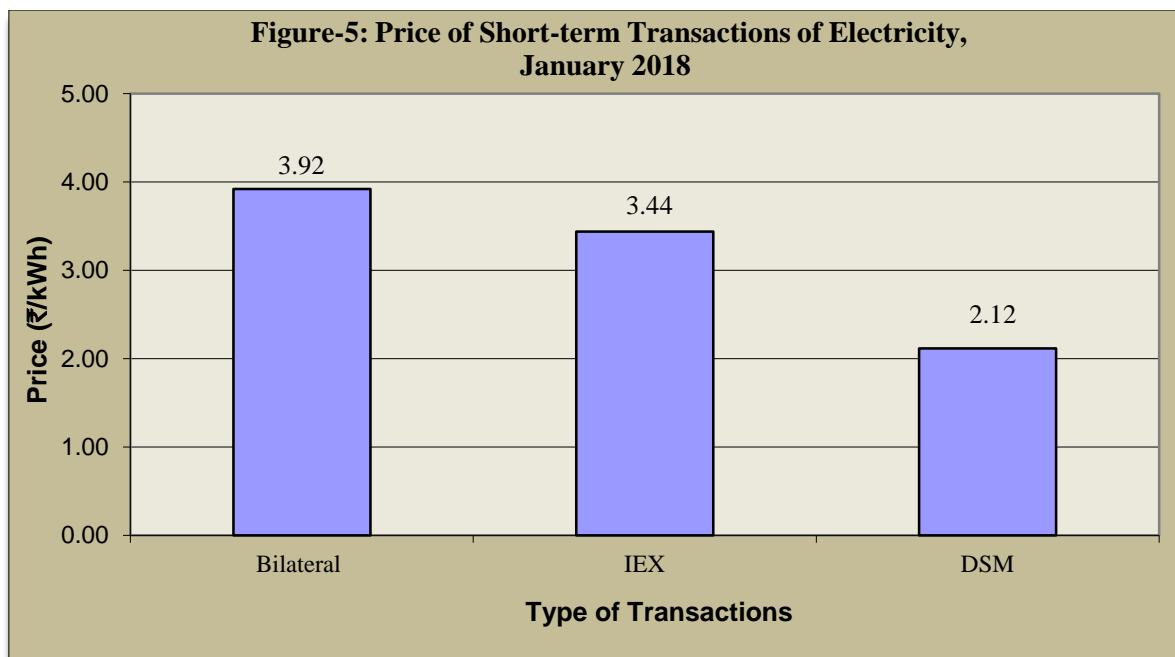
Source: IEX

| <b>Table-7: VOLUME AND PRICE OF ELECTRICITY IN TERM AHEAD MARKET OF PXIL, JANUARY 2018</b> |                             |                                      |                                       |
|--|-----------------------------|--------------------------------------|---------------------------------------|
| <b>Sr.No</b>   | <b>Term ahead contracts</b> | <b>Actual Scheduled Volume (MUs)</b> | <b>Weighted Average Price (₹/kWh)</b> |
| 1  | Intra-Day Contracts         | 13.79                                | 3.98                                  |
| 2  | Weekly Contracts            | 21.60                                | 3.60                                  |
|  | <b>Total</b>                | <b>35.39</b>                         | <b>3.75</b>                           |

Source: PXIL

| <b>Table-8: PRICE OF ELECTRICITY TRANSACTED THROUGH DSM, JANUARY 2018</b> |             |  |
|---|-------------|--|
| <b>Sr.No</b>  | <b>Item</b> | <b>Price in All India Grid (₹/kWh)</b> |
| 1   | Minimum     | 0.00                                   |
| 2   | Maximum     | 7.20                                   |
| 3   | Average     | 2.12                                   |

Source: NLDC



**Note:** There were no collective transactions in PXIL in January, 2018.

| <b>Table-9: VOLUME OF ELECTRICITY SOLD THROUGH BILATERAL, JANUARY 2018</b> |                             |                    |
|--|-----------------------------|--------------------|
| <b>Name of the Entity</b>  | <b>Volume of Sale (MUs)</b> | <b>% of Volume</b> |
| PUNJAB   | 1080.57                     | 23.20              |
| HARYANA  | 628.89                      | 13.50              |
| DELHI  | 606.54                      | 13.02              |
| SEMBBCORP  | 547.91                      | 11.77              |
| WEST BENGAL  | 211.51                      | 4.54               |
| ESSAR POWER  | 173.85                      | 3.73               |
| GMR CHATTISGARH  | 150.19                      | 3.23               |
| JINDAL POWER   | 147.50                      | 3.17               |
| RAJASTHAN  | 109.71                      | 2.36               |
| ADHUNIK POWER LTD  | 94.64                       | 2.03               |
| GUJARAT  | 77.99                       | 1.67               |
| SHREE CEMENT   | 71.08                       | 1.53               |
| JINDAL STAGE-II  | 68.06                       | 1.46               |
| JAYPEE NIGRIE  | 64.92                       | 1.39               |
| DB POWER   | 50.63                       | 1.09               |
| JITPL  | 48.53                       | 1.04               |
| ONGC PALATANA  | 48.36                       | 1.04               |
| MB POWER   | 47.09                       | 1.01               |
| SKS POWER  | 41.91                       | 0.90               |
| ANDHRA PRADESH   | 38.10                       | 0.82               |
| TELANGANA  | 34.54                       | 0.74               |
| DAGACHU  | 27.97                       | 0.60               |
| HIMACHAL PRADESH   | 27.35                       | 0.59               |
| DVC  | 27.28                       | 0.59               |
| ILF&S  | 25.08                       | 0.54               |
| MAHARASHTRA  | 23.21                       | 0.50               |
| MP   | 20.02                       | 0.43               |
| KARNATAKA  | 18.70                       | 0.40               |
| TRN ENERGY   | 15.33                       | 0.33               |
| J & K  | 14.78                       | 0.32               |
| UTTAR PRADESH  | 12.47                       | 0.27               |
| CHANDIGARH   | 11.16                       | 0.24               |
| ASSAM  | 10.54                       | 0.23               |
| SPECTRUM   | 10.28                       | 0.22               |
| JHABUA POWER_MP  | 8.99                        | 0.19               |
| MEGHALAYA  | 8.42                        | 0.18               |
| ACBIL  | 7.57                        | 0.16               |
| SIKKIM   | 7.50                        | 0.16               |
| TRIPURA  | 7.15                        | 0.15               |
| GOA  | 5.32                        | 0.11               |
| LANKO_AMK  | 5.08                        | 0.11               |
| TAMIL NADU   | 5.01                        | 0.11               |
| BALCO  | 4.02                        | 0.09               |
| TEESTA STG3  | 2.25                        | 0.05               |
| NAGALAND   | 2.24                        | 0.05               |
| ODISHA   | 2.16                        | 0.05               |
| MIZORAM  | 1.44                        | 0.03               |
| THERMAL POWERTECH  | 1.40                        | 0.03               |
| GMR KAMALANGA  | 0.71                        | 0.02               |
| MARUTI COAL  | 0.54                        | 0.01               |
| KERALA   | 0.22                        | 0.00               |
| <b>Total</b>   | <b>4656.88</b>              | <b>100.00</b>      |
| <b>Volume Sold by top 5 Regional Entities</b>                              | <b>3075.42</b>              | <b>66.04</b>       |

| <b>Table-10: VOLUME OF ELECTRICITY PURCHASED THROUGH BILATERAL,<br/>JANUARY 2018</b> |                                 |                    |
|--|---------------------------------|--------------------|
| <b>Name of the Entity</b>  | <b>Volume of Purchase (MUs)</b> | <b>% of Volume</b> |
| J & K  | 610.08                          | 13.23              |
| TAMIL NADU   | 484.75                          | 10.51              |
| MP   | 456.91                          | 9.91               |
| HIMACHAL PRADESH   | 428.37                          | 9.29               |
| KARNATAKA  | 424.67                          | 9.21               |
| TELANGANA  | 308.54                          | 6.69               |
| UTTARAKHAND  | 300.69                          | 6.52               |
| ANDHRA PRADESH   | 264.22                          | 5.73               |
| GUJARAT  | 187.08                          | 4.06               |
| ESSAR STEEL  | 167.84                          | 3.64               |
| MAHARASHTRA  | 122.76                          | 2.66               |
| ASSAM  | 107.53                          | 2.33               |
| BANGLADESH   | 106.09                          | 2.30               |
| JHARKHAND  | 94.64                           | 2.05               |
| NEPAL(NVVN)  | 89.06                           | 1.93               |
| BIHAR  | 77.47                           | 1.68               |
| CHHATTISGARH   | 63.86                           | 1.38               |
| RAJASTHAN  | 51.68                           | 1.12               |
| ODISHA   | 46.90                           | 1.02               |
| MEGHALAYA  | 44.33                           | 0.96               |
| UTTAR PRADESH  | 36.56                           | 0.79               |
| DELHI  | 30.20                           | 0.65               |
| KERALA   | 27.90                           | 0.60               |
| MANIPUR  | 26.15                           | 0.57               |
| GOA  | 21.81                           | 0.47               |
| SIKKIM   | 12.55                           | 0.27               |
| HARYANA  | 10.51                           | 0.23               |
| PUNJAB   | 4.40                            | 0.10               |
| WEST BENGAL  | 3.03                            | 0.07               |
| DVC  | 0.60                            | 0.01               |
| MIZORAM  | 0.48                            | 0.01               |
| TRIPURA  | 0.03                            | 0.00               |
| <b>TOTAL</b>   | <b>4611.68</b>                  | <b>100.00</b>      |
| <b>Volume Purchased by top 5 Regional Entities</b>                                   | <b>2404.79</b>                  | <b>52.15</b>       |

**Table-11: VOLUME OF ELECTRICITY SOLD THROUGH POWER EXCHANGES,  
JANUARY 2018**

| <b>Name of the Entity</b> | <b>Volume of Sale (MUs)</b> | <b>% of Volume</b> |
|---------------------------|-----------------------------|--------------------|
| DB POWER                  | 261.29                      | 7.74               |
| DVC                       | 214.91                      | 6.37               |
| MP                        | 188.50                      | 5.58               |
| TELANGANA                 | 171.04                      | 5.07               |
| TEESTA STG3               | 140.63                      | 4.17               |
| NLC                       | 140.46                      | 4.16               |
| SEMBCORP                  | 116.98                      | 3.47               |
| KARNATAKA                 | 114.55                      | 3.39               |
| DELHI                     | 110.40                      | 3.27               |
| WEST BENGAL               | 107.10                      | 3.17               |
| CHHATTISGARH              | 105.55                      | 3.13               |
| MAHARASHTRA               | 93.02                       | 2.76               |
| ANDHRA PRADESH            | 87.35                       | 2.59               |
| GUJARAT                   | 85.20                       | 2.52               |
| PUNJAB                    | 81.97                       | 2.43               |
| JAYPEE NIGRIE             | 75.06                       | 2.22               |
| MB POWER                  | 70.68                       | 2.09               |
| ODISHA                    | 69.97                       | 2.07               |
| THERMAL POWERTECH         | 69.90                       | 2.07               |
| ASSAM                     | 68.13                       | 2.02               |
| JINDAL POWER              | 63.88                       | 1.89               |
| HARYANA                   | 60.23                       | 1.78               |
| HIMACHAL PRADESH          | 59.18                       | 1.75               |
| TRIPURA                   | 57.18                       | 1.69               |
| JINDAL STAGE-II           | 50.68                       | 1.50               |
| TRN ENERGY                | 50.29                       | 1.49               |
| RAJASTHAN                 | 47.39                       | 1.40               |
| UTTAR PRADESH             | 46.20                       | 1.37               |
| ACBIL                     | 44.95                       | 1.33               |
| NTPC STATIONS-WR          | 40.25                       | 1.19               |
| KERALA                    | 39.77                       | 1.18               |
| SKS POWER                 | 35.43                       | 1.05               |
| JITPL                     | 32.54                       | 0.96               |
| J & K                     | 30.89                       | 0.92               |
| KARCHAM WANGTOO           | 29.53                       | 0.88               |
| GOA                       | 27.45                       | 0.81               |
| GMR CHATTISGARH           | 25.88                       | 0.77               |
| NTPC STATIONS-SR          | 20.66                       | 0.61               |
| SPECTRUM                  | 19.42                       | 0.58               |
| MIZORAM                   | 18.41                       | 0.55               |
| MANIPUR                   | 16.34                       | 0.48               |
| TAMIL NADU                | 16.05                       | 0.48               |
| DADRA & NAGAR HAVELI      | 15.04                       | 0.45               |
| SHREE CEMENT              | 14.33                       | 0.42               |
| MARUTI COAL               | 11.06                       | 0.33               |
| ESSAR POWER               | 10.92                       | 0.32               |
| AD HYDRO                  | 10.64                       | 0.32               |
| SIKKIM                    | 10.12                       | 0.30               |
| SAINJ HEP                 | 9.02                        | 0.27               |
| CHUZACHEN HEP             | 8.67                        | 0.26               |

|   |                |               |
|---|----------------|---------------|
| TASHIDENG HEP                                 | 8.43           | 0.25          |
| UTTARAKHAND                                   | 8.14           | 0.24          |
| NTPC STATIONS-NER                             | 7.88           | 0.23          |
| JORETHANG                                     | 7.83           | 0.23          |
| DIKCHU HEP                                    | 6.29           | 0.19          |
| MEGHALAYA                                     | 5.75           | 0.17          |
| JHABUA POWER MP                               | 5.38           | 0.16          |
| MAITHON POWER LTD                             | 5.06           | 0.15          |
| NJPC  | 4.51           | 0.13          |
| ILF&S   | 3.39           | 0.10          |
| NTPC STATIONS-NR                              | 3.28           | 0.10          |
| BIHAR   | 3.17           | 0.09          |
| CHANDIGARH                                    | 2.72           | 0.08          |
| NTPC STATIONS-ER                              | 2.54           | 0.08          |
| GMR KAMALANGA                                 | 2.06           | 0.06          |
| DHARIWAL POWER                                | 1.33           | 0.04          |
| EMCO  | 0.83           | 0.02          |
| MALANA  | 0.66           | 0.02          |
| LANCO BUDHIL                                  | 0.58           | 0.02          |
| ONGC PALATANA                                 | 0.29           | 0.01          |
| <b>TOTAL</b>                                  | <b>3375.23</b> | <b>100.00</b> |
| <b>Volume sold by top 5 Regional Entities</b> | <b>976.37</b>  | <b>28.93</b>  |

**Table-12: VOLUME OF ELECTRICITY PURCHASED THROUGH POWER EXCHANGES, JANUARY 2018**

| <b>Name of the Entity</b>                          | <b>Volume of Purchase (MUs)</b> | <b>% of Volume</b> |
|--|---------------------------------|--------------------|
| GUJARAT  | 583.99                          | 17.30              |
| MAHARASHTRA  | 413.20                          | 12.24              |
| BIHAR  | 359.49                          | 10.65              |
| KARNATAKA  | 250.85                          | 7.43               |
| RAJASTHAN  | 228.56                          | 6.77               |
| UTTARAKHAND  | 211.51                          | 6.27               |
| TELANGANA  | 199.00                          | 5.90               |
| ANDHRA PRADESH                                     | 166.40                          | 4.93               |
| J & K  | 143.23                          | 4.24               |
| ESSAR STEEL  | 129.21                          | 3.83               |
| WEST BENGAL  | 94.85                           | 2.81               |
| MP   | 80.64                           | 2.39               |
| ODISHA   | 80.57                           | 2.39               |
| TAMIL NADU   | 75.52                           | 2.24               |
| HARYANA  | 68.92                           | 2.04               |
| DELHI  | 63.70                           | 1.89               |
| ASSAM  | 61.31                           | 1.82               |
| HIMACHAL PRADESH                                   | 37.88                           | 1.12               |
| DAMAN AND DIU                                      | 25.28                           | 0.75               |
| KERALA   | 24.61                           | 0.73               |
| MEGHALAYA  | 13.96                           | 0.41               |
| GOA  | 10.60                           | 0.31               |
| CHHATTISGARH                                       | 9.44                            | 0.28               |
| DVC  | 8.75                            | 0.26               |
| CHANDIGARH   | 8.68                            | 0.26               |
| DADRA & NAGAR HAVELI                               | 6.28                            | 0.19               |
| PONDICHERRY  | 5.28                            | 0.16               |
| PUNJAB   | 4.93                            | 0.15               |
| ARUNACHAL PRADESH                                  | 3.98                            | 0.12               |
| NAGALAND   | 2.58                            | 0.08               |
| MANIPUR  | 1.36                            | 0.04               |
| TRIPURA  | 0.68                            | 0.02               |
| <b>TOTAL</b>                                       | <b>3375.23</b>                  | <b>100.00</b>      |
| <b>Volume purchased by top 5 Regional Entities</b> | <b>1836.09</b>                  | <b>54.40</b>       |

| <b>Table-13: VOLUME OF ELECTRICITY UNDER DRAWAL (EXPORTED) THROUGH DSM, JANUARY 2018</b> |                                    |                    |
|--|------------------------------------|--------------------|
| <b>Name of the Entity</b>  | <b>Volume of Underdrawal (MUs)</b> | <b>% of Volume</b> |
| NTPC STATIONS-WR   | 117.05                             | 7.52               |
| TELANGANA  | 106.16                             | 6.82               |
| SKS POWER  | 78.73                              | 5.06               |
| NTPC STATIONS-NR   | 73.58                              | 4.73               |
| SASAN UMPP   | 67.05                              | 4.31               |
| NLC  | 64.27                              | 4.13               |
| MP   | 61.40                              | 3.95               |
| MAHARASHTRA  | 59.06                              | 3.79               |
| KARNATAKA  | 54.18                              | 3.48               |
| GUJARAT  | 52.36                              | 3.36               |
| ANDHRA PRADESH   | 47.94                              | 3.08               |
| PUNJAB   | 47.28                              | 3.04               |
| BIHAR  | 43.77                              | 2.81               |
| UTTARAKHAND  | 43.09                              | 2.77               |
| DVC  | 42.79                              | 2.75               |
| CHHATTISGARH   | 41.94                              | 2.70               |
| NHPC STATIONS  | 33.52                              | 2.15               |
| TAMIL NADU   | 31.94                              | 2.05               |
| NTPC STATIONS-ER   | 29.41                              | 1.89               |
| UTTAR PRADESH  | 27.30                              | 1.75               |
| NTPC STATIONS-SR   | 26.32                              | 1.69               |
| DELHI  | 24.83                              | 1.60               |
| RAJASTHAN  | 22.34                              | 1.44               |
| J & K  | 21.35                              | 1.37               |
| ESSAR STEEL  | 21.21                              | 1.36               |
| HARYANA  | 20.69                              | 1.33               |
| LANKO_AMK  | 17.98                              | 1.16               |
| NSPCL  | 12.57                              | 0.81               |
| PONDICHERRY  | 12.39                              | 0.80               |
| NEPAL(NVVN)  | 11.76                              | 0.76               |
| JHARKHAND  | 9.47                               | 0.61               |
| HIMACHAL PRADESH   | 8.95                               | 0.57               |
| JAYPEE NIGRIE  | 8.90                               | 0.57               |
| KSK MAHANADI   | 8.26                               | 0.53               |
| MEGHALAYA  | 7.50                               | 0.48               |
| WEST BENGAL  | 7.49                               | 0.48               |
| TRN ENERGY   | 7.32                               | 0.47               |
| MB POWER   | 7.22                               | 0.46               |
| JINDAL STAGE-II  | 7.14                               | 0.46               |
| JITPL  | 6.93                               | 0.45               |
| ACBIL  | 6.78                               | 0.44               |
| MIZORAM  | 6.65                               | 0.43               |
| NEEPCO STATIONS  | 6.61                               | 0.42               |
| DB POWER   | 6.46                               | 0.41               |
| NJPC   | 6.42                               | 0.41               |
| ASSAM  | 6.41                               | 0.41               |
| TEESTA HEP   | 6.36                               | 0.41               |
| SIKKIM   | 6.32                               | 0.41               |
| KARCHAM WANGTOO  | 6.06                               | 0.39               |
| ODISHA   | 6.01                               | 0.39               |



|   |                |               |
|---|----------------|---------------|
| THERMAL POWERTECH                                 | 5.30           | 0.34          |
| GOA   | 5.29           | 0.34          |
| CGPL  | 5.13           | 0.33          |
| EMCO  | 5.04           | 0.32          |
| KERALA  | 4.55           | 0.29          |
| JINDAL POWER                                      | 4.52           | 0.29          |
| CHANDIGARH  | 4.46           | 0.29          |
| MAITHON POWER LTD                                 | 4.12           | 0.26          |
| TRIPURA   | 3.89           | 0.25          |
| DCPP  | 3.60           | 0.23          |
| MANIPUR   | 3.41           | 0.22          |
| GMR CHATTISGARH                                   | 3.39           | 0.22          |
| BALCO   | 3.33           | 0.21          |
| GMR KAMALANGA                                     | 3.28           | 0.21          |
| SEMBCORP  | 3.14           | 0.20          |
| JHABUA POWER_MP                                   | 2.97           | 0.19          |
| BANGLADESH  | 2.96           | 0.19          |
| NAGALAND  | 2.83           | 0.18          |
| TEESTA STG3                                       | 2.65           | 0.17          |
| RGPPL (DABHOL)                                    | 2.38           | 0.15          |
| URI-2   | 2.10           | 0.13          |
| ESSAR POWER                                       | 1.99           | 0.13          |
| ADHUNIK POWER LTD                                 | 1.77           | 0.11          |
| COASTGEN  | 1.52           | 0.10          |
| SHREE CEMENT                                      | 1.49           | 0.10          |
| ILF&S   | 1.34           | 0.09          |
| RANGIT HEP  | 1.34           | 0.09          |
| RANGANADI HEP                                     | 1.21           | 0.08          |
| DAMAN AND DIU                                     | 1.04           | 0.07          |
| ARUNACHAL PRADESH                                 | 0.97           | 0.06          |
| AD HYDRO  | 0.96           | 0.06          |
| DHARIWAL POWER                                    | 0.94           | 0.06          |
| NETCL VALLUR                                      | 0.87           | 0.06          |
| JORETHANG   | 0.85           | 0.05          |
| CHUZACHEN HEP                                     | 0.79           | 0.05          |
| LOKTAK  | 0.73           | 0.05          |
| TASHIDENG HEP                                     | 0.61           | 0.04          |
| DADRA & NAGAR HAVELI                              | 0.47           | 0.03          |
| RKM POWER   | 0.41           | 0.03          |
| DIKCHU HEP  | 0.35           | 0.02          |
| DOYANG HEP  | 0.34           | 0.02          |
| LANCO BUDHIL                                      | 0.24           | 0.02          |
| MALANA  | 0.05           | 0.00          |
| <b>Total</b>                                      | <b>1556.14</b> | <b>100.00</b> |
| <b>Volume Exported by top 5 Regional Entities</b> | <b>442.58</b>  | <b>28.44</b>  |

| <b>Table-14: VOLUME OF ELECTRICITY OVER DRAWAL (IMPORTED) THROUGH DSM, JANUARY 2018</b> |                                    |                    |
|---|------------------------------------|--------------------|
| <b>Name of the Entity</b>   | <b>Volume of Over drawal (MUs)</b> | <b>% of Volume</b> |
| RAJASTHAN   | 135.38                             | 7.75               |
| UTTAR PRADESH   | 106.26                             | 6.08               |
| TAMIL NADU  | 102.27                             | 5.85               |
| ODISHA  | 98.83                              | 5.66               |
| NEPAL(NVVN)   | 82.11                              | 4.70               |
| HARYANA   | 78.47                              | 4.49               |
| NTPC STATIONS-NR  | 74.94                              | 4.29               |
| GUJARAT   | 68.04                              | 3.89               |
| MAHARASHTRA   | 65.89                              | 3.77               |
| WEST BENGAL   | 56.51                              | 3.23               |
| NTPC STATIONS-WR  | 54.44                              | 3.12               |
| MP  | 46.73                              | 2.67               |
| BIHAR   | 46.68                              | 2.67               |
| NTPC STATIONS-SR  | 45.95                              | 2.63               |
| NTPC STATIONS-ER  | 42.70                              | 2.44               |
| PUNJAB  | 42.47                              | 2.43               |
| HIMACHAL PRADESH  | 38.74                              | 2.22               |
| JHARKHAND   | 33.27                              | 1.90               |
| KARNATAKA   | 32.42                              | 1.86               |
| ANDHRA PRADESH  | 31.88                              | 1.82               |
| DADRA & NAGAR HAVELI  | 26.01                              | 1.49               |
| KERALA  | 23.67                              | 1.35               |
| ESSAR STEEL   | 23.18                              | 1.33               |
| ASSAM   | 22.23                              | 1.27               |
| CGPL  | 21.20                              | 1.21               |
| J & K   | 20.40                              | 1.17               |
| DAMAN AND DIU   | 18.20                              | 1.04               |
| UTTARAKHAND   | 16.65                              | 0.95               |
| NETCL VALLUR  | 16.32                              | 0.93               |
| DELHI   | 16.12                              | 0.92               |
| NLC   | 15.80                              | 0.90               |
| DVC   | 15.24                              | 0.87               |
| ARUNACHAL PRADESH   | 14.89                              | 0.85               |
| GOA   | 12.84                              | 0.73               |
| DAGACHU   | 12.47                              | 0.71               |
| CHHATTISGARH  | 12.21                              | 0.70               |
| SEBPCORP  | 11.29                              | 0.65               |
| THERMAL POWERTECH   | 9.88                               | 0.57               |
| TELANGANA   | 9.07                               | 0.52               |
| CHANDIGARH  | 9.01                               | 0.52               |
| GMR KAMALANGA   | 8.35                               | 0.48               |
| BALCO   | 7.84                               | 0.45               |
| MB POWER  | 7.32                               | 0.42               |
| TRIPURA   | 7.28                               | 0.42               |
| BANGLADESH  | 6.66                               | 0.38               |
| ILF&S   | 6.20                               | 0.36               |
| SHREE CEMENT  | 4.73                               | 0.27               |
| JHABUA POWER_MP   | 4.73                               | 0.27               |
| JINDAL STAGE-II   | 4.68                               | 0.27               |
| NAGALAND  | 3.97                               | 0.23               |

|   |                |               |
|---|----------------|---------------|
| NJPC  | 3.87           | 0.22          |
| GMR CHATTISGARH                                   | 3.65           | 0.21          |
| KARCHAM WANGTOO                                   | 3.45           | 0.20          |
| RGPL (DABHOL)                                     | 3.37           | 0.19          |
| MAITHON POWER LTD                                 | 3.16           | 0.18          |
| ESSAR POWER                                       | 3.15           | 0.18          |
| TEESTA STG3                                       | 3.02           | 0.17          |
| MEENAKSHI   | 2.96           | 0.17          |
| EMCO  | 2.76           | 0.16          |
| NHPC STATIONS                                     | 2.73           | 0.16          |
| JITPL   | 2.58           | 0.15          |
| DB POWER  | 2.47           | 0.14          |
| RKM POWER   | 2.26           | 0.13          |
| JAYPEE NIGRIE                                     | 2.14           | 0.12          |
| NSPCL   | 2.12           | 0.12          |
| JINDAL POWER                                      | 1.88           | 0.11          |
| SIKKIM  | 1.88           | 0.11          |
| MANIPUR   | 1.87           | 0.11          |
| JORETHANG   | 1.76           | 0.10          |
| COASTGEN  | 1.70           | 0.10          |
| PONDICHERRY                                       | 1.66           | 0.09          |
| MEGHALAYA   | 1.64           | 0.09          |
| ACBIL   | 1.58           | 0.09          |
| TRN ENERGY  | 1.55           | 0.09          |
| TASHIDENG HEP                                     | 1.44           | 0.08          |
| ADHUNIK POWER LTD                                 | 1.44           | 0.08          |
| RANGANADI HEP                                     | 1.44           | 0.08          |
| NEEPCO STATIONS                                   | 1.04           | 0.06          |
| MIZORAM   | 1.00           | 0.06          |
| DGEN MEGA POWER                                   | 0.97           | 0.06          |
| LANKO KONDAPALLI                                  | 0.83           | 0.05          |
| SIMHAPURI   | 0.77           | 0.04          |
| SASAN UMPP  | 0.75           | 0.04          |
| AD HYDRO  | 0.71           | 0.04          |
| CHUZACHEN HEP                                     | 0.61           | 0.04          |
| RANGIT HEP  | 0.60           | 0.03          |
| LANCO BUDHIL                                      | 0.57           | 0.03          |
| SKS POWER   | 0.55           | 0.03          |
| DCPP  | 0.53           | 0.03          |
| DIKCHU HEP  | 0.35           | 0.02          |
| DOYANG HEP  | 0.35           | 0.02          |
| URI-2   | 0.32           | 0.02          |
| KORBA WEST POWER                                  | 0.28           | 0.02          |
| DHARIWAL POWER                                    | 0.28           | 0.02          |
| LOKTAK  | 0.17           | 0.01          |
| KSK MAHANADI                                      | 0.14           | 0.01          |
| MALANA  | 0.14           | 0.01          |
| TEESTA HEP  | 0.07           | 0.00          |
| LANKO_AMK   | 0.01           | 0.00          |
| <b>TOTAL</b>                                      | <b>1746.97</b> | <b>100.00</b> |
| <b>Volume Imported by top 5 Regional Entities</b> | <b>524.84</b>  | <b>30.04</b>  |

| <b>Table-15: TOTAL VOLUME OF NET SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY-WISE), JANUARY 2018</b> |                           |  |
|--|---------------------------|--|
| <b>Sr.No.</b>  | <b>Name of the Entity</b> | <b>Total volume of net short-term transactions of electricity*</b> |
| 1  | J & K                     | 706.68   |
| 2  | GUJARAT                   | 623.55   |
| 3  | TAMIL NADU                | 609.53   |
| 4  | KARNATAKA                 | 520.52   |
| 5  | UTTARAKHAND               | 477.62   |
| 6  | BIHAR                     | 436.70   |
| 7  | MAHARASHTRA               | 426.56   |
| 8  | HIMACHAL PRADESH          | 409.52   |
| 9  | MP                        | 314.36   |
| 10   | ESSAR STEEL               | 299.02   |
| 11   | ANDHRA PRADESH            | 289.11   |
| 12   | RAJASTHAN                 | 236.17   |
| 13   | TELANGANA                 | 204.86   |
| 14   | NEPAL(NVVN)               | 159.40   |
| 15   | ODISHA                    | 148.15   |
| 16   | JHARKHAND                 | 118.43   |
| 17   | BANGLADESH                | 109.79   |
| 18   | ASSAM                     | 105.99   |
| 19   | UTTAR PRADESH             | 56.86  |
| 20   | DAMAN AND DIU             | 42.45  |
| 21   | MEGHALAYA                 | 38.27  |
| 22   | KERALA                    | 31.63  |
| 23   | ARUNACHAL PRADESH         | 17.90  |
| 24   | DADRA & NAGAR HAVELI      | 16.62  |
| 25   | CGPL                      | 16.07  |
| 26   | NETCL VALLUR              | 15.45  |
| 27   | NTPC STATIONS-ER          | 10.75  |
| 28   | MANIPUR                   | 9.62   |
| 29   | GOA                       | 7.19   |
| 30   | MEENAKSHI                 | 2.96   |
| 31   | GMR KAMALANGA             | 2.30   |
| 32   | RKM POWER                 | 1.85   |
| 33   | NAGALAND                  | 1.48   |
| 34   | RGPPL (DABHOL)            | 0.99   |
| 35   | DGEN MEGA POWER           | 0.97   |
| 36   | LANKO KONDAPALLI          | 0.83   |
| 37   | SIMHAPURI                 | 0.77   |
| 38   | MALANA                    | -0.57  |
| 39   | CHANDIGARH                | -0.65  |
| 40   | RANGIT HEP                | -0.74  |
| 41   | NTPC STATIONS-SR          | -1.03  |
| 42   | URI-2                     | -1.78  |
| 43   | NTPC STATIONS-NR          | -1.93  |
| 44   | DHARIWAL POWER            | -1.99  |
| 45   | DCPP                      | -3.07  |
| 46   | EMCO                      | -3.10  |
| 47   | PONDICHERRY               | -5.45  |
| 48   | NEEPCO STATIONS           | -5.56  |
| 49   | MAITHON POWER LTD         | -6.02  |
| 50   | DIKCHU HEP                | -6.29  |

|   |                   |          |
|---|-------------------|----------|
| 51  | TEESTA HEP        | -6.29    |
| 52  | JORETHANG         | -6.92    |
| 53  | NJPC              | -7.06    |
| 54  | TASHIDENG HEP     | -7.60    |
| 55  | NTPC STATIONS-NER | -7.88    |
| 56  | KSK MAHANADI      | -8.12    |
| 57  | CHUZACHEN HEP     | -8.85    |
| 58  | SAINJ HEP         | -9.02    |
| 59  | SIKKIM            | -9.51    |
| 60  | NSPCL             | -10.45   |
| 61  | AD HYDRO          | -10.89   |
| 62  | MARUTI COAL       | -11.60   |
| 63  | JHABUA POWER_MP   | -12.61   |
| 64  | DAGACHU           | -15.50   |
| 65  | LANKO_AMK         | -23.05   |
| 66  | ILF&S             | -23.61   |
| 67  | MIZORAM           | -25.02   |
| 68  | SPECTRUM          | -29.70   |
| 69  | NHPC STATIONS     | -30.79   |
| 70  | KARCHAM WANGTOO   | -32.14   |
| 71  | ONGC PALATANA     | -48.65   |
| 72  | ACBIL             | -57.72   |
| 73  | TRIPURA           | -60.24   |
| 74  | CHHATTISGARH      | -61.98   |
| 75  | SASAN UMPP        | -66.30   |
| 76  | THERMAL POWERTECH | -66.73   |
| 77  | TRN ENERGY        | -71.38   |
| 78  | SHREE CEMENT      | -82.16   |
| 79  | JITPL             | -85.41   |
| 80  | ADHUNIK POWER LTD | -94.96   |
| 81  | NTPC STATIONS-WR  | -102.86  |
| 82  | MB POWER          | -117.67  |
| 83  | JINDAL STAGE-II   | -121.21  |
| 84  | TEESTA STG3       | -142.51  |
| 85  | JAYPEE NIGRIE     | -146.74  |
| 86  | SKS POWER         | -155.52  |
| 87  | WEST BENGAL       | -171.69  |
| 88  | GMR CHATTISGARH   | -175.82  |
| 89  | ESSAR POWER       | -183.62  |
| 90  | NLC               | -188.93  |
| 91  | JINDAL POWER      | -214.02  |
| 92  | DVC               | -260.40  |
| 93  | DB POWER          | -315.90  |
| 94  | HARYANA           | -551.91  |
| 95  | DELHI             | -631.74  |
| 96  | SEMBCORP          | -656.74  |
| 97  | PUNJAB            | -1158.03 |
| * 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, JANUARY 2018</b>      |  |            |
|--|--|------------|
|  | <b>Details of Congestion</b>   | <b>IEX</b> |
| A  | Unconstrained Cleared Volume* (MUs)  | 3389.22    |
| B  | Actual Cleared Volume and hence scheduled (MUs)  | 3377.79    |
| C  | Volume of electricity that could not be cleared and hence not scheduled because of congestion (MUs) (A-B)                            | 11.43      |
| D  | Volume of electricity that could not be cleared as % to Unconstrained Cleared Volume   | 0.34%      |
| E  | Percentage of the time congestion occurred during the month (Number of hours congestion occurred/Total number of hours in the month) | 4.91%      |
| F  | Congestion occurrence (%) time block wise  |            |
|  | 0.00 - 6.00 hours  | 2.74%      |
|  | 6.00 - 12.00 hours   | 50.68%     |
|  | 12.00 - 18.00 hours  | 17.81%     |
|  | 18.00 - 24.00 hours  | 28.77%     |
| <i>* This power would have been scheduled had there been no congestion.</i>  |  |            |
| <i>Source: IEX &amp; PXIL &amp; NLDC</i>                                     |  |            |
| <i>Note: There were no collective transactions in PXIL in January, 2018.</i> |  |            |

**Table-17: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY IN INDIA  
(DAY-WISE) (MUs), JANUARY 2018**

| Date         | Bilateral                       |                | Power Exchange<br>(Area Clearing<br>Volume# of Day<br>Ahead Market) |             | Deviation<br>Settlement<br>(Over<br>Drawl+Under<br>Generation) | Total<br>Electricity<br>Generation<br>(MU) as given<br>at CEA<br>Website* |
|--------------|---------------------------------|----------------|---|-------------|--|---|
|              | Through<br>Traders<br>and PXs** | Direct         | IEX   | PXIL        |  |   |
| 1-Jan-18     | 78.58                           | 48.50          | 106.44  | 0.00        | 63.53  |   |
| 2-Jan-18     | 85.28                           | 54.54          | 100.76  | 0.00        | 56.72  |   |
| 3-Jan-18     | 85.26                           | 55.36          | 100.22  | 0.00        | 52.73  |   |
| 4-Jan-18     | 86.81                           | 55.43          | 98.01   | 0.00        | 55.05  |   |
| 5-Jan-18     | 85.78                           | 55.93          | 109.05  | 0.00        | 55.78  |   |
| 6-Jan-18     | 88.56                           | 55.96          | 104.02  | 0.00        | 53.40  |   |
| 7-Jan-18     | 91.58                           | 60.90          | 102.06  | 0.00        | 50.98  |   |
| 8-Jan-18     | 89.04                           | 61.58          | 103.71  | 0.00        | 55.12  |   |
| 9-Jan-18     | 88.93                           | 58.92          | 106.31  | 0.00        | 52.83  |   |
| 10-Jan-18    | 88.47                           | 53.47          | 102.62  | 0.00        | 54.02  |   |
| 11-Jan-18    | 97.90                           | 50.05          | 108.45  | 0.00        | 54.98  |   |
| 12-Jan-18    | 87.30                           | 51.77          | 116.79  | 0.00        | 53.48  |   |
| 13-Jan-18    | 83.04                           | 48.41          | 121.58  | 0.00        | 52.69  |   |
| 14-Jan-18    | 78.37                           | 49.33          | 104.64  | 0.00        | 56.43  |   |
| 15-Jan-18    | 83.02                           | 48.11          | 113.50  | 0.00        | 56.01  |   |
| 16-Jan-18    | 85.00                           | 52.59          | 120.89  | 0.00        | 50.66  |   |
| 17-Jan-18    | 99.04                           | 52.57          | 114.84  | 0.00        | 52.25  |   |
| 18-Jan-18    | 101.63                          | 53.11          | 109.29  | 0.00        | 55.47  |   |
| 19-Jan-18    | 97.37                           | 60.69          | 113.90  | 0.00        | 56.92  |   |
| 20-Jan-18    | 96.43                           | 51.16          | 106.05  | 0.00        | 54.79  |   |
| 21-Jan-18    | 94.18                           | 59.43          | 97.82   | 0.00        | 53.06  |   |
| 22-Jan-18    | 97.35                           | 57.21          | 100.88  | 0.00        | 51.01  |   |
| 23-Jan-18    | 95.87                           | 57.15          | 108.03  | 0.00        | 55.51  |   |
| 24-Jan-18    | 99.27                           | 52.17          | 116.49  | 0.00        | 52.47  |   |
| 25-Jan-18    | 102.86                          | 52.94          | 113.07  | 0.00        | 55.02  |   |
| 26-Jan-18    | 98.01                           | 52.73          | 104.23  | 0.00        | 58.14  |   |
| 27-Jan-18    | 96.80                           | 54.64          | 117.06  | 0.00        | 54.99  |   |
| 28-Jan-18    | 106.30                          | 53.51          | 108.30  | 0.00        | 56.14  |   |
| 29-Jan-18    | 123.71                          | 54.76          | 115.73  | 0.00        | 57.47  |   |
| 30-Jan-18    | 118.75                          | 56.38          | 115.40  | 0.00        | 59.55  |   |
| 31-Jan-18    | 117.22                          | 54.66          | 115.11  | 0.00        | 55.42  |   |
| <b>Total</b> | <b>2927.71</b>                  | <b>1683.97</b> | <b>3375.23</b>  | <b>0.00</b> | <b>1702.62</b>   | <b>101202.97</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), JANUARY, 2018**

| Market Segment | Day ahead market of IEX |              |                         | Under Drawl/Over Drawl from the Grid (DSM) |               |                 |
|----------------|-------------------------|--------------|-------------------------|--|---------------|-----------------|
| Date           | Minimum ACP             | Maximum ACP  | Weighted Average Price* | All India Grid                             |               |                 |
|                |                         |              |                         | Minimum Price                              | Maximum Price | Average Price** |
| 1-Jan-18       | 1.75                    | 5.25         | 3.43                    | 0.00                                       | 7.20          | 1.73            |
| 2-Jan-18       | 1.50                    | 4.67         | 3.18                    | 0.00                                       | 5.32          | 2.24            |
| 3-Jan-18       | 1.70                    | 5.40         | 3.46                    | 0.00                                       | 5.11          | 2.51            |
| 4-Jan-18       | 1.70                    | 5.50         | 3.49                    | 0.00                                       | 5.95          | 2.55            |
| 5-Jan-18       | 1.50                    | 5.47         | 3.49                    | 0.00                                       | 6.36          | 2.54            |
| 6-Jan-18       | 1.75                    | 5.85         | 3.49                    | 0.00                                       | 5.11          | 2.26            |
| 7-Jan-18       | 1.85                    | 5.00         | 3.24                    | 0.00                                       | 5.11          | 1.94            |
| 8-Jan-18       | 1.85                    | 5.69         | 3.64                    | 0.00                                       | 3.45          | 1.68            |
| 9-Jan-18       | 1.85                    | 4.50         | 3.30                    | 0.00                                       | 3.45          | 1.80            |
| 10-Jan-18      | 1.87                    | 4.60         | 3.12                    | 0.00                                       | 4.91          | 1.85            |
| 11-Jan-18      | 1.80                    | 4.50         | 3.22                    | 0.00                                       | 5.32          | 2.25            |
| 12-Jan-18      | 1.80                    | 5.30         | 3.53                    | 0.00                                       | 5.32          | 2.60            |
| 13-Jan-18      | 1.92                    | 5.25         | 3.42                    | 0.00                                       | 4.91          | 2.07            |
| 14-Jan-18      | 1.84                    | 4.51         | 3.12                    | 0.00                                       | 3.45          | 1.77            |
| 15-Jan-18      | 1.80                    | 5.25         | 3.58                    | 0.00                                       | 3.45          | 1.79            |
| 16-Jan-18      | 1.75                    | 5.25         | 3.61                    | 0.00                                       | 3.45          | 2.26            |
| 17-Jan-18      | 1.92                    | 5.25         | 3.55                    | 0.00                                       | 4.91          | 2.46            |
| 18-Jan-18      | 1.92                    | 5.62         | 3.85                    | 0.00                                       | 6.16          | 1.89            |
| 19-Jan-18      | 1.92                    | 5.69         | 3.61                    | 0.00                                       | 3.45          | 1.89            |
| 20-Jan-18      | 1.92                    | 4.50         | 3.33                    | 0.00                                       | 3.45          | 1.93            |
| 21-Jan-18      | 1.75                    | 4.40         | 3.05                    | 0.00                                       | 3.24          | 1.58            |
| 22-Jan-18      | 1.80                    | 4.90         | 3.52                    | 0.00                                       | 5.32          | 2.15            |
| 23-Jan-18      | 1.79                    | 5.25         | 3.61                    | 0.00                                       | 5.32          | 2.34            |
| 24-Jan-18      | 1.80                    | 5.78         | 3.68                    | 0.00                                       | 4.91          | 2.38            |
| 25-Jan-18      | 1.92                    | 5.85         | 3.65                    | 0.00                                       | 6.16          | 2.74            |
| 26-Jan-18      | 1.92                    | 5.25         | 3.15                    | 0.00                                       | 3.45          | 2.02            |
| 27-Jan-18      | 1.92                    | 5.49         | 3.74                    | 0.00                                       | 5.11          | 2.18            |
| 28-Jan-18      | 2.00                    | 5.00         | 3.14                    | 0.00                                       | 3.45          | 1.94            |
| 29-Jan-18      | 1.92                    | 5.12         | 3.46                    | 0.00                                       | 3.45          | 2.11            |
| 30-Jan-18      | 1.92                    | 5.00         | 3.43                    | 0.00                                       | 4.91          | 2.10            |
| 31-Jan-18      | 1.80                    | 5.00         | 3.43                    | 0.00                                       | 5.74          | 1.99            |
|                | <b>1.50#</b>            | <b>5.85#</b> | <b>3.44</b>             | <b>0.00#</b>                               | <b>7.20#</b>  | <b>2.12</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

Note: There were no collective transactions in PXIL in January, 2018.



**Table-19: VOLUME OF SHORT-TERM TRANSACTIONS OF ELECTRICITY (REGIONAL ENTITY\*-WISE)  
(MUs), JANUARY 2018**

| 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             | 1080.57           | 4.40     | -1076.17 | 81.97                  | 4.93     | -77.05  | 42.47                          | 47.28                | -4.81  | -1158.03     |
| HARYANA            | 628.89            | 10.51    | -618.39  | 60.23                  | 68.92    | 8.70    | 78.47                          | 20.69                | 57.78  | -551.91      |
| RAJASTHAN          | 109.71            | 51.68    | -58.03   | 47.39                  | 228.56   | 181.17  | 135.38                         | 22.34                | 113.04 | 236.17       |
| DELHI              | 606.54            | 30.20    | -576.34  | 110.40                 | 63.70    | -46.69  | 16.12                          | 24.83                | -8.71  | -631.74      |
| UP                 | 12.47             | 36.56    | 24.09    | 46.20                  | 0.00     | -46.20  | 106.26                         | 27.30                | 78.96  | 56.86        |
| UTTARAKHAN         | 0.00              | 300.69   | 300.69   | 8.14                   | 211.51   | 203.37  | 16.65                          | 43.09                | -26.44 | 477.62       |
| HP                 | 27.35             | 428.37   | 401.02   | 59.18                  | 37.88    | -21.30  | 38.74                          | 8.95                 | 29.79  | 409.52       |
| J & K              | 14.78             | 610.08   | 595.30   | 30.89                  | 143.23   | 112.34  | 20.40                          | 21.35                | -0.95  | 706.68       |
| MP                 | 20.02             | 456.91   | 436.90   | 188.50                 | 80.64    | -107.86 | 46.73                          | 61.40                | -14.67 | 314.36       |
| MAHARASHTR         | 23.21             | 122.76   | 99.55    | 93.02                  | 413.20   | 320.18  | 65.89                          | 59.06                | 6.83   | 426.56       |
| GUJARAT            | 77.99             | 187.08   | 109.09   | 85.20                  | 583.99   | 498.79  | 68.04                          | 52.36                | 15.68  | 623.55       |
| CHHATTISGAR        | 0.00              | 63.86    | 63.86    | 105.55                 | 9.44     | -96.11  | 12.21                          | 41.94                | -29.73 | -61.98       |
| GOA                | 5.32              | 21.81    | 16.49    | 27.45                  | 10.60    | -16.85  | 12.84                          | 5.29                 | 7.55   | 7.19         |
| DAMAN & DIU        | 0.00              | 0.00     | 0.00     | 0.00                   | 25.28    | 25.28   | 18.20                          | 1.04                 | 17.17  | 42.45        |
| D&N HAVELI         | 0.17              | 0.00     | -0.17    | 15.04                  | 6.28     | -8.76   | 26.01                          | 0.47                 | 25.54  | 16.62        |
| AP                 | 38.10             | 264.22   | 226.12   | 87.35                  | 166.40   | 79.05   | 31.88                          | 47.94                | -16.06 | 289.11       |
| KARNATAKA          | 18.70             | 424.67   | 405.97   | 114.55                 | 250.85   | 136.30  | 32.42                          | 54.18                | -21.76 | 520.52       |
| KERALA             | 0.22              | 27.90    | 27.68    | 39.77                  | 24.61    | -15.16  | 23.67                          | 4.55                 | 19.11  | 31.63        |
| TAMIL NADU         | 5.01              | 484.75   | 479.74   | 16.05                  | 75.52    | 59.47   | 102.27                         | 31.94                | 70.33  | 609.53       |
| PONDICHERR         | 0.00              | 0.00     | 0.00     | 0.00                   | 5.28     | 5.28    | 1.66                           | 12.39                | -10.73 | -5.45        |
| TELANGANA          | 34.54             | 308.54   | 274.00   | 171.04                 | 199.00   | 27.95   | 9.07                           | 106.16               | -97.09 | 204.86       |
| WEST BENGAL        | 211.51            | 3.03     | -208.47  | 107.10                 | 94.85    | -12.24  | 56.51                          | 7.49                 | 49.03  | -171.69      |
| ODISHA             | 2.16              | 46.90    | 44.74    | 69.97                  | 80.57    | 10.59   | 98.83                          | 6.01                 | 92.82  | 148.15       |
| BIHAR              | 0.00              | 77.47    | 77.47    | 3.17                   | 359.49   | 356.32  | 46.68                          | 43.77                | 2.91   | 436.70       |
| JHARKHAND          | 0.00              | 94.64    | 94.64    | 0.00                   | 0.00     | 0.00    | 33.27                          | 9.47                 | 23.79  | 118.43       |
| SIKKIM             | 7.50              | 12.55    | 5.05     | 10.12                  | 0.00     | -10.12  | 1.88                           | 6.32                 | -4.44  | -9.51        |
| DVC                | 27.28             | 0.60     | -26.68   | 214.91                 | 8.75     | -206.17 | 15.24                          | 42.79                | -27.55 | -260.40      |
| ARUNACHAL P        | 0.00              | 0.00     | 0.00     | 0.00                   | 3.98     | 3.98    | 14.89                          | 0.97                 | 13.92  | 17.90        |
| ASSAM              | 10.54             | 107.53   | 96.99    | 68.13                  | 61.31    | -6.82   | 22.23                          | 6.41                 | 15.82  | 105.99       |
| MANIPUR            | 0.00              | 26.15    | 26.15    | 16.34                  | 1.36     | -14.98  | 1.87                           | 3.41                 | -1.54  | 9.62         |
| MEGHALAYA          | 8.42              | 44.33    | 35.91    | 5.75                   | 13.96    | 8.22    | 1.64                           | 7.50                 | -5.86  | 38.27        |
| MIZORAM            | 1.44              | 0.48     | -0.96    | 18.41                  | 0.00     | -18.41  | 1.00                           | 6.65                 | -5.66  | -25.02       |
| NAGALAND           | 2.24              | 0.00     | -2.24    | 0.00                   | 2.58     | 2.58    | 3.97                           | 2.83                 | 1.14   | 1.48         |
| TRIPURA            | 7.15              | 0.03     | -7.12    | 57.18                  | 0.68     | -56.50  | 7.28                           | 3.89                 | 3.39   | -60.24       |
| NTPC -NR           | 0.00              | 0.00     | 0.00     | 3.28                   | 0.00     | -3.28   | 74.94                          | 73.58                | 1.35   | -1.93        |
| NHPC STN           | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 2.73                           | 33.52                | -30.79 | -30.79       |
| NJPC               | 0.00              | 0.00     | 0.00     | 4.51                   | 0.00     | -4.51   | 3.87                           | 6.42                 | -2.55  | -7.06        |
| AD HYDRO           | 0.00              | 0.00     | 0.00     | 10.64                  | 0.00     | -10.64  | 0.71                           | 0.96                 | -0.25  | -10.89       |
| KARCHAM WA         | 0.00              | 0.00     | 0.00     | 29.53                  | 0.00     | -29.53  | 3.45                           | 6.06                 | -2.61  | -32.14       |
| SHREE CEME         | 71.08             | 0.00     | -71.08   | 14.33                  | 0.00     | -14.33  | 4.73                           | 1.49                 | 3.25   | -82.16       |
| URI-2              | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 0.32                           | 2.10                 | -1.78  | -1.78        |
| SAINJ HEP          | 0.00              | 0.00     | 0.00     | 9.02                   | 0.00     | -9.02   | 0.00                           | 0.00                 | 0.00   | -9.02        |
| NTPC -WR           | 0.00              | 0.00     | 0.00     | 40.25                  | 0.00     | -40.25  | 54.44                          | 117.05               | -62.61 | -102.86      |
| JINDAL POWE        | 147.50            | 0.00     | -147.50  | 63.88                  | 0.00     | -63.88  | 1.88                           | 4.52                 | -2.64  | -214.02      |
| LANKO_AMK          | 5.08              | 0.00     | -5.08    | 0.00                   | 0.00     | 0.00    | 0.01                           | 17.98                | -17.97 | -23.05       |
| NSPCL              | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 2.12                           | 12.57                | -10.45 | -10.45       |
| ACBIL              | 7.57              | 0.00     | -7.57    | 44.95                  | 0.00     | -44.95  | 1.58                           | 6.78                 | -5.20  | -57.72       |
| CGPL               | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 21.20                          | 5.13                 | 16.07  | 16.07        |
| DCPP               | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 0.53                           | 3.60                 | -3.07  | -3.07        |
| EMCO               | 0.00              | 0.00     | 0.00     | 0.83                   | 0.00     | -0.83   | 2.76                           | 5.04                 | -2.27  | -3.10        |
| ESSAR STEEL        | 0.00              | 167.84   | 167.84   | 0.00                   | 129.21   | 129.21  | 23.18                          | 21.21                | 1.97   | 299.02       |
| KSK MAHANA         | 0.00              | 0.00     | 0.00     | 0.00                   | 0.00     | 0.00    | 0.14                           | 8.26                 | -8.12  | -8.12        |

|                 |        |        |         |        |      |         |       |       |        |         |
|-----------------|--------|--------|---------|--------|------|---------|-------|-------|--------|---------|
| ESSAR POWER     | 173.85 | 0.00   | -173.85 | 10.92  | 0.00 | -10.92  | 3.15  | 1.99  | 1.16   | -183.62 |
| JINDAL STG-II   | 68.06  | 0.00   | -68.06  | 50.68  | 0.00 | -50.68  | 4.68  | 7.14  | -2.46  | -121.21 |
| DB POWER        | 50.63  | 0.00   | -50.63  | 261.29 | 0.00 | -261.29 | 2.47  | 6.46  | -3.98  | -315.90 |
| DHARIWAL POWER  | 0.00   | 0.00   | 0.00    | 1.33   | 0.00 | -1.33   | 0.28  | 0.94  | -0.66  | -1.99   |
| JAYPEE NIGRI    | 64.92  | 0.00   | -64.92  | 75.06  | 0.00 | -75.06  | 2.14  | 8.90  | -6.75  | -146.74 |
| GMR CHATTISGARH | 150.19 | 0.00   | -150.19 | 25.88  | 0.00 | -25.88  | 3.65  | 3.39  | 0.25   | -175.82 |
| MB POWER        | 47.09  | 0.00   | -47.09  | 70.68  | 0.00 | -70.68  | 7.32  | 7.22  | 0.10   | -117.67 |
| MARUTI COAL     | 0.54   | 0.00   | -0.54   | 11.06  | 0.00 | -11.06  | 0.00  | 0.00  | 0.00   | -11.60  |
| SPECTRUM        | 10.28  | 0.00   | -10.28  | 19.42  | 0.00 | -19.42  | 0.00  | 0.00  | 0.00   | -29.70  |
| JHABUA_MP       | 8.99   | 0.00   | -8.99   | 5.38   | 0.00 | -5.38   | 4.73  | 2.97  | 1.76   | -12.61  |
| SASAN UMPP      | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 0.75  | 67.05 | -66.30 | -66.30  |
| TRN ENERGY      | 15.33  | 0.00   | -15.33  | 50.29  | 0.00 | -50.29  | 1.55  | 7.32  | -5.76  | -71.38  |
| RKM POWER       | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 2.26  | 0.41  | 1.85   | 1.85    |
| SKS POWER       | 41.91  | 0.00   | -41.91  | 35.43  | 0.00 | -35.43  | 0.55  | 78.73 | -78.18 | -155.52 |
| NTPC -SR        | 0.00   | 0.00   | 0.00    | 20.66  | 0.00 | -20.66  | 45.95 | 26.32 | 19.63  | -1.03   |
| MEENAKSHI       | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 2.96  | 0.00  | 2.96   | 2.96    |
| THERMAL POWER   | 1.40   | 0.00   | -1.40   | 69.90  | 0.00 | -69.90  | 9.88  | 5.30  | 4.57   | -66.73  |
| ILF&S           | 25.08  | 0.00   | -25.08  | 3.39   | 0.00 | -3.39   | 6.20  | 1.34  | 4.86   | -23.61  |
| NLC             | 0.00   | 0.00   | 0.00    | 140.46 | 0.00 | -140.46 | 15.80 | 64.27 | -48.47 | -188.93 |
| SEMBCORP        | 547.91 | 0.00   | -547.91 | 116.98 | 0.00 | -116.98 | 11.29 | 3.14  | 8.15   | -656.74 |
| NETCL VALLU     | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 16.32 | 0.87  | 15.45  | 15.45   |
| NTPC -ER        | 0.00   | 0.00   | 0.00    | 2.54   | 0.00 | -2.54   | 42.70 | 29.41 | 13.30  | 10.75   |
| MAITHON POWER   | 0.00   | 0.00   | 0.00    | 5.06   | 0.00 | -5.06   | 3.16  | 4.12  | -0.96  | -6.02   |
| ADHUNIK P       | 94.64  | 0.00   | -94.64  | 0.00   | 0.00 | 0.00    | 1.44  | 1.77  | -0.33  | -94.96  |
| CHUZACHEN I     | 0.00   | 0.00   | 0.00    | 8.67   | 0.00 | -8.67   | 0.61  | 0.79  | -0.18  | -8.85   |
| GMR KAMALA      | 0.71   | 0.00   | -0.71   | 2.06   | 0.00 | -2.06   | 8.35  | 3.28  | 5.06   | 2.30    |
| JITPL           | 48.53  | 0.00   | -48.53  | 32.54  | 0.00 | -32.54  | 2.58  | 6.93  | -4.35  | -85.41  |
| TEESTA HEP      | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 0.07  | 6.36  | -6.29  | -6.29   |
| DAGACHU         | 27.97  | 0.00   | -27.97  | 0.00   | 0.00 | 0.00    | 12.47 | 0.00  | 12.47  | -15.50  |
| JORETHANG       | 0.00   | 0.00   | 0.00    | 7.83   | 0.00 | -7.83   | 1.76  | 0.85  | 0.90   | -6.92   |
| NEPAL(NVVN)     | 0.00   | 89.06  | 89.06   | 0.00   | 0.00 | 0.00    | 82.11 | 11.76 | 70.34  | 159.40  |
| BANGLADESH      | 0.00   | 106.09 | 106.09  | 0.00   | 0.00 | 0.00    | 6.66  | 2.96  | 3.71   | 109.79  |
| TEESTA STG3     | 2.25   | 0.00   | -2.25   | 140.63 | 0.00 | -140.63 | 3.02  | 2.65  | 0.37   | -142.51 |
| DIKCHU HEP      | 0.00   | 0.00   | 0.00    | 6.29   | 0.00 | -6.29   | 0.35  | 0.35  | 0.00   | -6.29   |
| TASHIDENG H     | 0.00   | 0.00   | 0.00    | 8.43   | 0.00 | -8.43   | 1.44  | 0.61  | 0.83   | -7.60   |
| NTPC NER        | 0.00   | 0.00   | 0.00    | 7.88   | 0.00 | -7.88   | 0.00  | 0.00  | 0.00   | -7.88   |
| NEEPCO STNS     | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 1.04  | 6.61  | -5.56  | -5.56   |
| RANGANADI H     | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 1.44  | 1.21  | 0.23   | 0.23    |
| DOYANG HEP      | 0.00   | 0.00   | 0.00    | 0.00   | 0.00 | 0.00    | 0.35  | 0.34  | 0.00   | 0.00    |
| ONGC PALATA     | 48.36  | 0.00   | -48.36  | 0.29   | 0.00 | -0.29   | 0.00  | 0.00  | 0.00   | -48.65  |

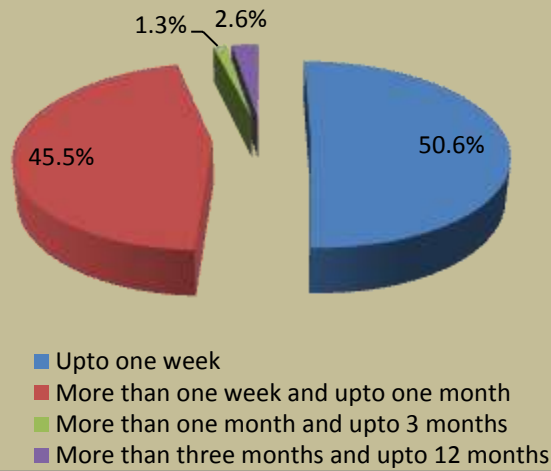
Source: NLDC

\* 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.

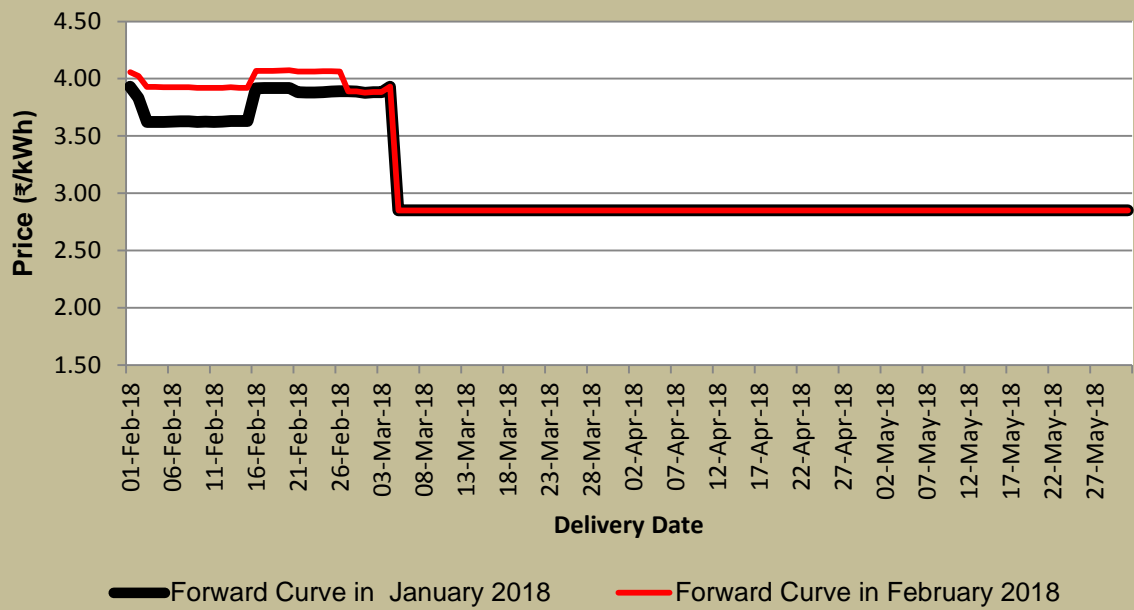
\*\* (-) indicates sale and (+) indicates purchase,

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

**Figure 7: Bilateral Contracts executed by Traders in February, 2018**



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



| <b>Table-20 : VOLUME AND PRICE OF RENEWABLE ENERGY CERTIFICATES (RECs)<br/>TRANSACTIONED THROUGH POWER EXCHANGES, JANUARY 2018</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                   | 182254           | 1048572          |
| B  | Volume of Sell Bid                  | 2327874          | 3432528          |
| C  | Ratio of Buy Bid to Sell Bid Volume | 0.08             | 0.31             |
| D  | Market Clearing Volume (MWh)        | 182254           | 1048572          |
| E  | Market Clearing Price (₹/MWh)       | 1500             | 1500             |

Source: IEX and PXIL

Note 1: 1 REC = 1 MWh

|         |   |                     |                           |
|---------|---|---------------------|---------------------------|
| Note 2: | <i>Forbearance and Floor Price w.e.f 1st March 2015</i> |                     |                           |
|         | Type of REC   | Floor Price (₹/MWh) | Forbearance Price (₹/MWh) |
|         | Non-Solar   | 1500.00             | 3300.00                   |