



फरवरी, 2020 मासिक मार्केट मॉनिटरिंग रिपोर्ट

Monthly Market Monitoring Report

February, 2020



भारत सरकार/ Government of India
विद्युत मंत्रालय/ Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
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REPORT FOR MONTH: FEBRUARY, 2020

OVERVIEW OF ELECTRICITY TRANSACTIONS ON POWEREXCHANGES IN INDIA

1. DAY AHEAD MARKET (DAM)

- 1.1. The total volume of electricity transacted on both the power exchanges, viz., IEX and PXIL in the day ahead market in the month of February 2020 was **4,289.43 MU**. The total energy supplied in the country during the month of February, 2020 was **103,815 MU**. The volume of electricity transacted on the power exchanges in DAM represents 4.13 % of the total energy supplied in the country. The total volume of electricity transacted in February, 2019 was **2,794.32 MU** which was 3.01% of the total energy supplied in the country in February, 2019 [**92,912 MU**].
- 1.2. The volume of electricity transacted on IEX and PXIL during February, 2020 are 4,289.15 MU and 0.28 MU, respectively, which means that the total volume transacted on IEX is 99.99 % of the total volume on the power exchanges. The total volume of electricity transacted during February, 2019 on IEX and PXIL was 2,794.09 MU and 0.23 MU, respectively, which means that the total volume transacted on IEX was 99.99 % of the total volume on the power exchanges.
- 1.3. The Average Market Clearing Price (MCP) on IEX during the month February, 2020 is Rs 2.91/kWh, which shows a decline of 5.52% when compared with average MCP for the month of February, 2019, which was Rs 3.08/kWh. Similarly, on PXIL, the Average MCP during February, 2020 is Rs 3.14/kWh, which shows a decline of 10.03 % when compared with average MCP for the month of February, 2019, which was Rs 3.49/kWh.

2. SUMMARY OF THE MARKET CLEARING PRICE, AREA CLEARING PRICE AND SCHEDULE VOLUME IN THE POWER EXCHANGES

- 2.1. A comparison of the Minimum, Maximum and Average of daily MCP during the months of February, 2020 and February, 2019 are as given below:

Daily MCP (Rs/kWh)	IEX			PXIL		
	February, 2020	February, 2019	% Change	February, 2020	February, 2019	% Change
Minimum	2.56	2.72	-5.88	2.72	2.90	-6.21
Maximum	3.15	3.54	-11.02	3.65	4.03	-9.43
Average	2.91	3.08	-5.52	3.14	3.49	-10.03

Table: 1

- 2.2. The maximum Area Clearing Price (ACP) in IEX was observed in all 13 regions at **Rs 5.00/kWh** during the time block 07:45-08:00 on 17th February, 2020. As there was **no** congestion in transmission system on that day, the MCP for this time-block was also **Rs 5.00/kWh**. However, the Daily MCP on pan India basis on 17th February, 2020 was **Rs 3.09/kWh**.
- 2.3. The minimum ACP in IEX was observed in all 13 regions at **Rs 0.996/kWh** during the time block 03:30-03:45 on 3rd February, 2020. As there was **no** congestion in transmission system on that day, the MCP for this time-block was also **Rs 0.996/kWh**. However, the Daily MCP on pan India basis on 3rd February, 2020 was **Rs 2.56/kWh**.
- 2.4. A comparison of the Minimum and Maximum ACP during the months of February, 2020 and February, 2019 in IEX are as given below:

ACP (Rs/kWh)	IEX		
	February, 2020	February, 2019	% Change
Minimum	0.99	1.25	-20.80
Maximum	5.00	6.57	-23.90

Table: 2

- 2.5. A comparison of the Minimum, Maximum and Average Scheduled Volume of electricity transactions happened on IEX and PXIL for a day during the months of February, 2020 and February, 2019 are as given below:

Scheduled Volume (MU)	IEX			PXIL		
	February, 2020	February, 2019	% Change	February, 2020	February, 2019	% Change
Minimum	126.54	70.14	80.41	0.013	0.029	-55.17
Maximum	163.19	131.41	24.18	0.029	0.096	-69.79
Average	147.90	99.79	48.21	0.026	0.058	-55.17

Table: 3

- 2.6. The total volume of electricity transacted on both the power exchanges during the period, April, 2019 to February, 2020 was 45,187.78 MU. The same was 46,783.37 MU during the period from April, 2018 to February, 2019, which shows a decline of 3.41%. A comparison of Final Scheduled Volume and the Average MCP for the period of April, 2019 to February, 2020 of IEX and PXIL are given at **Annexure-I**.

3. TERM AHEAD MARKET (TAM)

- 3.1. The total volume of electricity transacted on both the power exchanges in term ahead market in February, 2020 was **252.40 MU** (i.e. 222.93 MU on IEX and 29.47 MU on

PXIL), which means that the total volume transacted on IEX was 88.32 % and PXIL was 11.68 % of total volume in term ahead market in both the power exchanges. The total volume of electricity transacted during February, 2019 in term ahead market on both the power exchanges was **229.52 MU** (i.e. 137.84 MU on IEX and 91.68 MU on PXIL), which means that the total volume on IEX was 60.06 % and PXIL was 39.94 % of the total volume on the power exchanges. This shows an increase of 9.97% in TAM during February, 2020 as compared to February, 2019.

- 3.2. With respect to the total energy supplied during the month of February, 2020 in the country the volume of electricity traded on the power exchanges in TAM represents **0.24 %** of the total energy supplied. The same was **0.25 %** also in February, 2019.
- 3.3. The Total Volume of electricity transacted on both the power exchanges during the period, April, 2019 to February, 2020 in TAM, was 7,049.82 MU. The same was 2,695.42 MU during the same period April, 2018 to February, 2019, which shows an increase of 158.71 %. A comparison of Final Scheduled Volume for the months of April, 2019 to February, 2020 of IEX and PXIL are given at **Annexure-II**.

4. ANALYSIS OF MOVEMENT OF PRICES OBSERVED IN DAM DURING FEBRUARY, 2020

A regression analysis has been carried out on the Day Ahead Market data taken from IEX website. Also, data was plotted in various graphs to observe patterns for each day of the February, 2020 month. The observations made are as under:

- 4.1 In order to find out the determinants which are responsible for the Daily MCP, a regression analysis has been carried out where the Daily MCP is the dependent variable and the independent variables are peak demand, total purchase bid, total sell bid, coal generation, hydro generation, wind generation and solar generation.
- 4.2 A double log function was used so that elasticity of Daily MCP could be read off from the coefficients of independent variables. The regression analysis revealed that the significant variables were only the total purchase bid, total sell bid and coal generation. All the other variables were found to be insignificant. The regression analysis further revealed that the maximum elasticity of the Daily MCP was with respect to total purchase bid and elasticity figure was around 0.26. In effect, the regression reveals that the most important variable which determines daily market clearing price is the total purchase bid in the month of February, 2020.

4.3 The same relationship is visible from the analysis carried out from the plot in **Figure 1**.

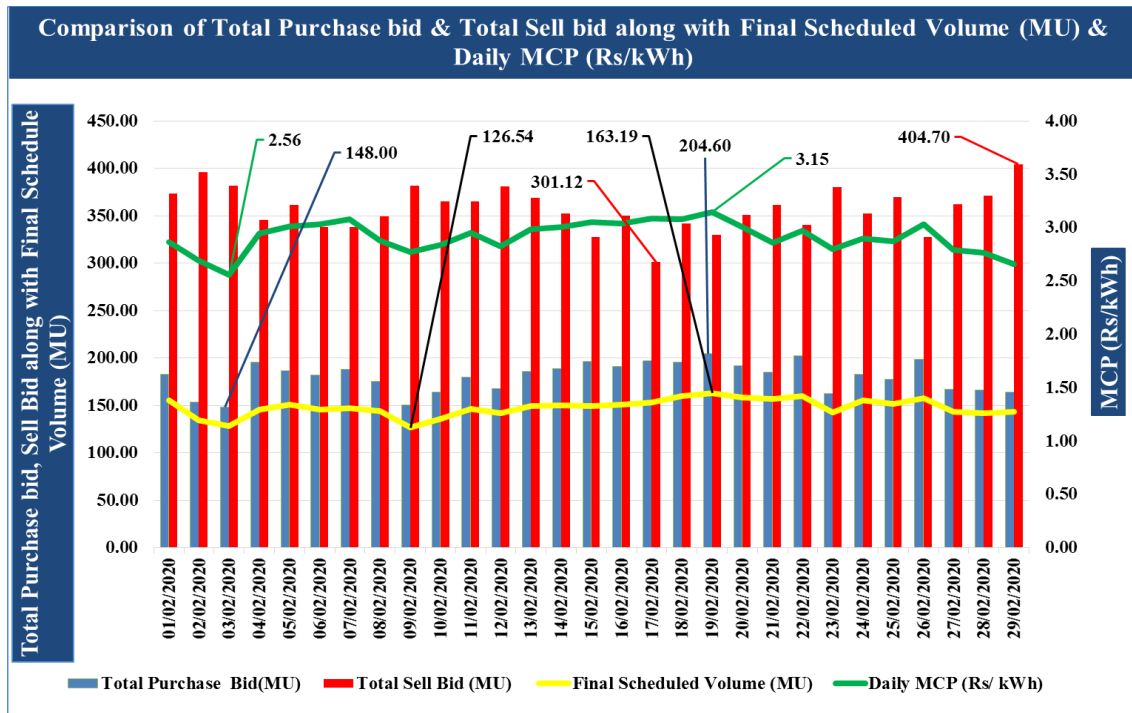


Figure -1

4.4 Invariably, the Final Scheduled Volume (MU) and the Daily MCP (Rs/kWh) showed decreasing trend on Sundays as the demand of electricity in the country is less compared to other days of week [**Figure 1**]. However, in the month of February, 2020, it is observed that on first Monday (i.e. 3rd February, 2020), FSV showed decreasing trend in comparison to Sunday (i.e. 2nd February, 2020). The detailed analysis on this is given at **Appendix-I**.

4.5 A comparison of maximum, minimum, daily, non-peak time, peak time MCP is shown in **Figure -2**. The same are also tabulated in **Annexure III**.

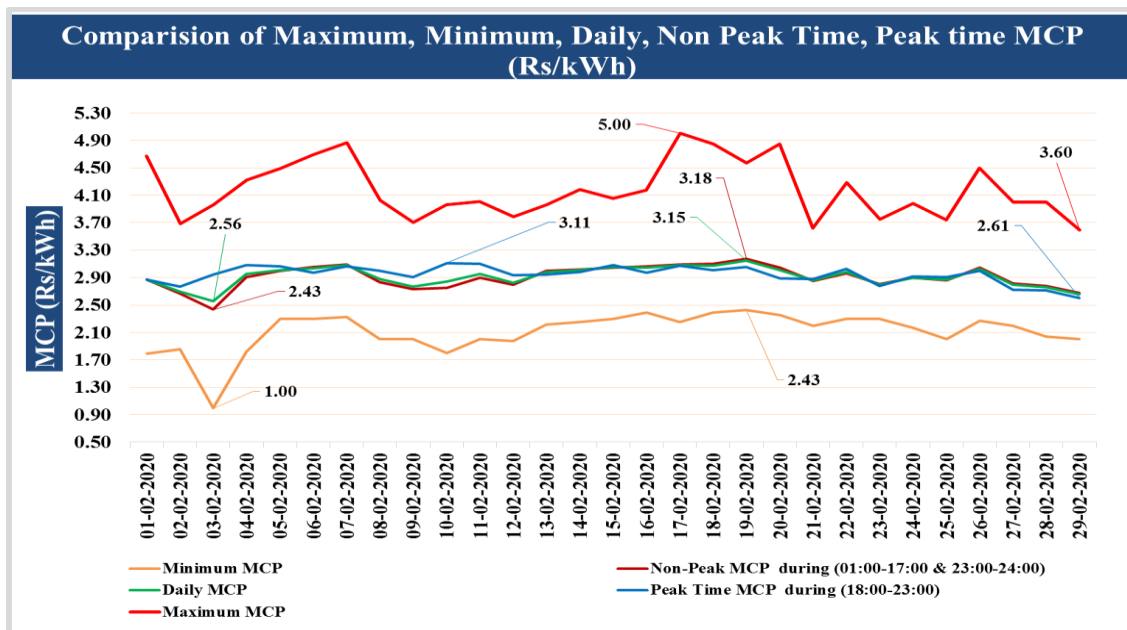


Figure -2

- 4.6 The Purchase Bids and the MCP discovered in each of the 15-minute time block during the month almost followed the same trend [**Annexure IV**]. This is also corroborated with the outcome of regression analysis mentioned in at para 4.1 and 4.2 above.
- 4.7 On all **29 days** during the month, the maximum FSV occurred during the **time period 07:30 - 08:30** [**Annexure V**].
- 4.8 On **23 days** during the month, the minimum FSV occurred during the **time period 22:00 - 23:00** [**Annexure V**].
- 4.9 On **26 days** during the month, the maximum MCP occurred during the **time period 07:30 - 08:30** [**Annexure V**].
- 4.10 On **23 days** during the month, the minimum MCP occurred during the **time period 03:15 - 04:15** [**Annexure V**].
- 4.11 The maximum demand met during the month of February, 2020 in the country occurred on **18th February, 2020 at 176.58 GW**, which is 9.22 % more as compared to maximum demand during the month of February, 2019 i.e. [**161.67 GW on 5th February, 2019**].
- 4.12 One nation One Price is observed for **28 days** during the month, as there was transmission congestion for **1 day** (i.e. 29th February, 2020) in IEX during the month. Whereas in the month of February, 2019, transmission congestion happened on **24 days** in IEX, so one nation one price was observed for **4 days** in February, 2019. There were congestion in 6 time blocks (0.216 % duration of the month) out of 2784 time blocks in February, 2020, in comparison to 388 time blocks (14.43 % duration of the month) out of 2688 time blocks in February, 2019.
- 4.13 There is no real time curtailment on IEX and PXIL in February, 2020. Also, there was no real time curtailment in February, 2019 on both the power exchanges.
- 4.14 The cumulative real time curtailment during the period April, 2019 to February, 2020 was **13.72 MU** in DAM. During months of April, 2018 to February, 2019 the real time curtailment was **72.84 MU** in DAM. The month wise real time curtailment is given at **Annexure-I**.
- 4.15 The **top 10 sellers** on the power exchanges during the month are: **Adani Power STG2, Sembcorp Gayatri, Odisha, Madhya Pradesh, JITPL, Uttar Pradesh, DB Power, Himachal Pradesh, Rajasthan and Jaypee Nigrie**, which constituted **51.00 %** of the market share.[**Annexure VI**]
- 4.16 The **top 10 purchaser** on the power exchanges during the month are: **Telangana, Gujarat, Maharashtra, J&K, Tamil Nadu, Rajasthan, Andhra Pradesh, Bihar, Delhi and Punjab**, which constituted **77.46 %** of the market share. [**Annexure VI**]

- Source DAM and TAM data: IEX and PXIL
- Source Entity wise sale and purchase on PXs data: NLDC

Annexure-I
Final Scheduled Volume, Average MCP and Real-Time Curtailment in Day Ahead Market (DAM) for the months of April, 2019 to February, 2020 of IEX and PXIL

Months	Final Scheduled Volume (MU)		Market Clearing Price (Rs/kWh)		Real Time Curtailment (MU)	
	IEX	PXIL	IEX	PXIL	IEX	PXIL
April, 2019	4,005.41	31.43	3.22	3.75	3.090	-
May, 2019	3,772.47	1.17	3.34	3.45	0.217	-
June, 2019	4,206.68	0.42	3.32	3.48	4.910	-
July, 2019	4,800.37	0.35	3.38	3.21	0.039	-
August, 2019	4,674.88	0.35	3.32	3.10	4.420	-
September, 2019	3,487.57	1.03	2.77	2.85	-	-
October, 2019	3,391.49	9.81	2.71	2.62	-	-
November, 2019	3,388.84	0.42	2.85	3.01	-	-
December, 2019	4,333.32	0.46	2.93	2.93	-	-
January, 2020	4790.96	0.92	2.86	2.85	1.038	-
February, 2020	4289.15	0.28	2.91	3.14	-	-
Total	45,141.14	46.64			13.714	-

- There was no real time curtailment.

Annexure-II**Final Scheduled Volume in Term Ahead Market (TAM) for the months of April, 2019 to February, 2020 of IEX and PXIL**

Months	Final Scheduled Volume (MU)		
	IEX	PXIL	Total
April, 2019	334.13	293.46	627.59
May, 2019	326.72	122.10	448.82
June, 2019	368.84	139.22	508.06
July, 2019	523.59	224.35	747.94
August, 2019	808.07	555.51	1,363.58
September, 2019	380.02	390.45	770.47
October, 2019	480.74	447.21	927.95
November, 2019	458.83	131.16	589.99
December, 2019	371.14	142.88	514.02
January, 2020	270.35	28.65	299.00
February, 2020	222.93	29.47	252.40
Total	4545.36	2504.46	7,049.82

Annexure-III**Peak Time MCP, Non-Peak MCP, Maximum MCP, Minimum MCP, Average MCP and Final Schedule Volume (MU)**

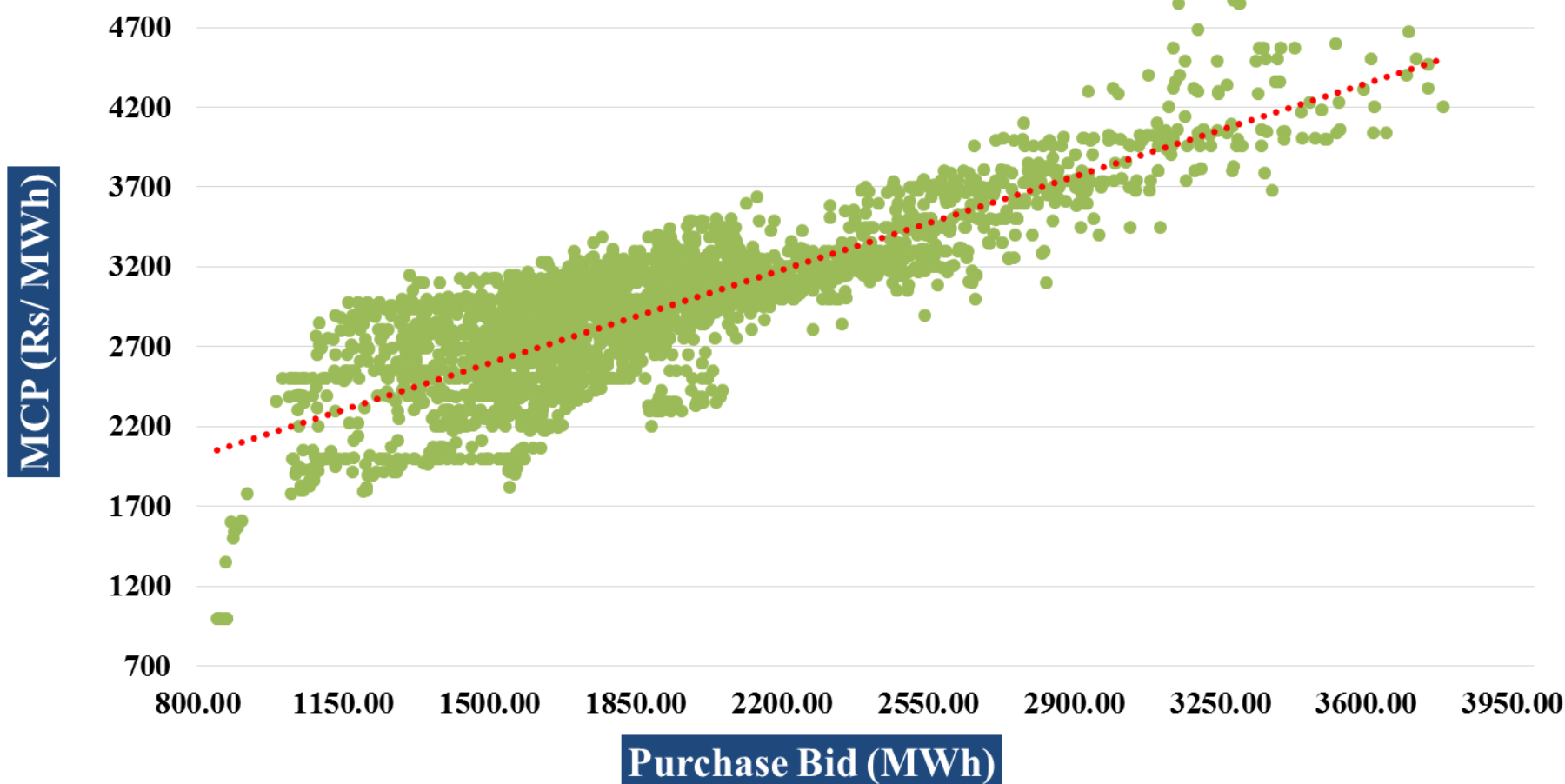
Date	MCP during (01:00-06:00, 23:00-24:00)	MCP during (07:00-10:00)	MCP during (11:00-17:00)	Peak Time MCP during (18:00-23:00)	Non-Peak MCP during (01:00-17:00 & 23:00-24:00)	Maximum MCP	Minimum MCP	Average MCP	Final Scheduled Volume (MU)
01/02/2020	2.08	3.92	3.05	2.87	2.87	4.67	1.79	2.87	155.25
02/02/2020	2.08	3.26	2.92	2.77	2.67	3.68	1.86	2.69	134.57
03/02/2020	1.48	3.37	2.85	2.94	2.43	3.96	1.00	2.56	128.72
04/02/2020	2.20	3.75	3.12	3.08	2.90	4.32	1.82	2.95	145.49
05/02/2020	2.47	3.73	3.11	3.06	3.00	4.49	2.30	3.01	150.96
06/02/2020	2.55	3.88	3.08	2.97	3.05	4.69	2.30	3.03	145.43
07/02/2020	2.57	3.96	3.12	3.06	3.09	4.87	2.33	3.08	147.02
08/02/2020	2.31	3.50	2.98	3.00	2.83	4.03	2.00	2.88	144.30
09/02/2020	2.25	3.41	2.82	2.91	2.73	3.70	2.00	2.77	126.54
10/02/2020	2.09	3.57	2.95	3.11	2.75	3.96	1.80	2.84	135.54
11/02/2020	2.39	3.60	3.02	3.10	2.90	4.01	2.00	2.95	146.44
12/02/2020	2.31	3.43	2.91	2.93	2.79	3.79	1.97	2.83	142.15
13/02/2020	2.51	3.62	3.12	2.95	3.00	3.96	2.22	2.98	149.04
14/02/2020	2.56	3.66	3.10	2.98	3.02	4.18	2.25	3.01	150.11
15/02/2020	2.61	3.74	3.08	3.08	3.04	4.05	2.30	3.05	149.20
16/02/2020	2.68	3.77	3.04	2.97	3.06	4.17	2.39	3.04	151.27
17/02/2020	2.53	3.91	3.18	3.07	3.09	5.00	2.25	3.09	152.91
18/02/2020	2.61	3.87	3.15	3.01	3.10	4.85	2.39	3.08	159.87
19/02/2020	2.70	3.87	3.26	3.06	3.18	4.57	2.43	3.15	163.19
20/02/2020	2.68	3.65	3.05	2.89	3.04	4.85	2.35	3.00	158.54
21/02/2020	2.44	3.35	2.97	2.88	2.85	3.63	2.20	2.86	156.96
22/02/2020	2.51	3.41	3.15	3.03	2.96	4.29	2.30	2.98	160.27
23/02/2020	2.50	3.28	2.84	2.78	2.81	3.75	2.30	2.80	142.52
24/02/2020	2.41	3.37	3.11	2.92	2.89	3.98	2.17	2.90	155.46
25/02/2020	2.34	3.41	3.06	2.91	2.86	3.74	2.00	2.87	151.57
26/02/2020	2.60	3.83	3.03	3.00	3.04	4.50	2.27	3.03	157.44
27/02/2020	2.44	3.50	2.80	2.73	2.82	4.00	2.20	2.79	143.04
28/02/2020	2.33	3.40	2.88	2.71	2.78	4.00	2.04	2.76	141.96
29/02/2020	2.22	3.26	2.80	2.61	2.68	3.60	2.00	2.66	143.41
Maximum	2.70	3.96	3.26	3.11	3.18	5.00	2.43	3.15	163.19
Minimum	1.48	3.26	2.80	2.61	2.43	3.60	1.00	2.56	126.54
Average	2.39	3.60	3.02	2.94	2.90	4.18	2.11	2.91	147.90

MCP: Market Clearing Price (Rs/kWh)

FSV: Final Scheduled Volume (MU)

Annexure-IV

Comparison of MCP w.r.t. Purchase Bid for 2,784 Time Blocks during the month of February, 2020



Time Blocks during the Month [96 time blocks in a day x 29 days = 2,784]

Annexure-V**Max. FSV, Min FSV, Max MCP and Min MCP**

Date	Max. FSV (MU)		Max. MCP (Rs/kWh)		Min FSV (MU)		Min. MCP (Rs/kWh)	
	Time Block	Value	Time Block	Value	Time Block	Value	Time Block	Value
01/02/2020	07:30 - 07:45	2.97	08:15 - 08:30	4.67	22:45 - 23:00	1.01	04:00 - 04:15	1.79
02/02/2020	08:15 - 08:30	2.32	07:45 - 08:00	3.68	23:15 - 23:30	0.93	04:00 - 04:15	1.86
03/02/2020	08:15 - 08:30	2.33	08:15 - 08:30	3.96	23:15 - 23:30	0.81	03:30 - 03:45	1.00
04/02/2020	08:00 - 08:15	2.79	08:15 - 08:30	4.32	00:30 - 00:45	0.90	03:30 - 03:45	1.82
05/02/2020	08:00 - 08:15	2.65	08:00 - 08:15	4.49	05:15 - 05:30	1.01	04:00 - 04:15	2.30
06/02/2020	07:45 - 08:00	2.55	08:00 - 08:15	4.69	05:15 - 05:30	1.10	03:30 - 03:45	2.30
07/02/2020	08:00 - 08:15	2.56	07:45 - 08:00	4.87	22:15 - 22:30	1.04	03:15 - 03:30	2.33
08/02/2020	08:00 - 08:15	2.37	08:00 - 08:15	4.03	22:00 - 22:15	1.08	04:00 - 04:15	2.00
09/02/2020	08:00 - 08:15	2.20	09:30 - 09:45	3.70	22:15 - 22:30	0.72	04:00 - 04:15	2.00
10/02/2020	07:45 - 08:00	2.24	08:45 - 09:00	3.96	22:00 - 22:15	0.96	03:30 - 03:45	1.80
11/02/2020	08:00 - 08:15	2.32	08:45 - 09:00	4.01	05:00 - 05:15	1.03	04:00 - 04:15	2.00
12/02/2020	08:15 - 08:30	2.25	08:15 - 08:30	3.79	22:30 - 22:45	0.88	04:00 - 04:15	1.97
13/02/2020	07:45 - 08:00	2.66	07:45 - 08:00	3.96	22:15 - 22:30	0.97	03:15 - 03:30	2.22
14/02/2020	07:45 - 08:00	2.77	08:00 - 08:15	4.18	22:00 - 22:15	0.90	03:30 - 03:45	2.25
15/02/2020	07:45 - 08:00	2.70	07:45 - 08:00	4.05	22:30 - 22:45	0.83	22:45 - 23:00	2.30
16/02/2020	07:30 - 07:45	2.88	07:45 - 08:00	4.17	22:45 - 23:00	0.81	22:45 - 23:00	2.39
17/02/2020	07:45 - 08:00	2.52	07:45 - 08:00	5.00	22:45 - 23:00	0.83	03:30 - 03:45	2.25
18/02/2020	07:45 - 08:00	2.67	08:15 - 08:30	4.85	22:30 - 22:45	0.89	03:30 - 03:45	2.39
19/02/2020	07:30 - 07:45	2.60	07:30 - 07:45	4.57	22:15 - 22:30	0.88	03:45 - 04:00	2.43
20/02/2020	07:30 - 07:45	2.54	07:45 - 08:00	4.85	22:45 - 23:00	0.85	22:00 - 22:15	2.35
21/02/2020	08:00 - 08:15	2.29	08:00 - 08:15	3.63	22:30 - 22:45	0.92	18:00 - 18:15	2.20
22/02/2020	07:45 - 08:00	2.37	08:15 - 08:30	4.29	22:15 - 22:30	0.86	03:15 - 03:30	2.30
23/02/2020	08:00 - 08:15	2.16	08:00 - 08:15	3.75	22:45 - 23:00	0.86	22:00 - 22:15	2.30
24/02/2020	07:45 - 08:00	2.47	08:15 - 08:30	3.98	22:45 - 23:00	0.90	03:15 - 03:30	2.17
25/02/2020	08:00 - 08:15	2.62	08:00 - 08:15	3.74	22:45 - 23:00	0.84	04:00 - 04:15	2.00
26/02/2020	07:45 - 08:00	2.64	07:45 - 08:00	4.50	22:45 - 23:00	0.85	04:00 - 04:15	2.27
27/02/2020	07:45 - 08:00	2.69	08:00 - 08:15	4.00	22:45 - 23:00	0.81	03:45 - 04:00	2.20
28/02/2020	07:45 - 08:00	2.69	08:15 - 08:30	4.00	22:45 - 23:00	0.82	03:45 - 04:00	2.04
29/02/2020	08:00 - 08:15	2.34	08:15 - 08:30	3.60	22:45 - 23:00	0.89	22:45 - 23:00	2.00

MCP: Market Clearing Price (Rs/kWh)

FSV: Final Scheduled Volume (MU)

Annexure-VI**Top Ten Entity (Sellers and Purchaser) during the month of February, 2020**

Entity Name	Sell		Entity Name	Purchase	
	(MU)	Percent		(MU)	Percent (%)
Adani Power STG2	476.71	11.11%	Telangana	950.33	22.16%
Sembcorp Gayatri	281.85	6.57%	Gujarat	411.56	9.59%
Odisha	238.01	5.55%	Maharashtra	364.30	8.49%
Madhya Pradesh	228.20	5.32%	J&K	347.70	8.11%
JITPL	204.78	4.77%	Tamil Nadu	338.80	7.90%
Uttar Pradesh	186.98	4.36%	Rajasthan	204.01	4.76%
DB Power	172.62	4.02%	Andhra Pradesh	188.55	4.40%
Himachal Pradesh	147.43	3.44%	Bihar	174.00	4.06%
Rajasthan	140.71	3.28%	Delhi	173.60	4.05%
Jaypee Nigrie	110.51	2.58%	Punjab	169.70	3.96%
Total	2187.80	51.00%	Total	3322.55	77.46%
Total Volume in PXs	4289.43		Total Volume in PXs	4289.43	

Appendix-I**Analysis for change in trend of Final Scheduled Volume on 1st Monday of February, 2020 i.e. on 3rd February, 2020**

1. It was observed that during the months of April to June, 2019, the Final Scheduled Volume (FSV) and Daily Market Clearing Price (MCP) invariably showed similar decreasing trend on Sundays and increasing trend on Mondays as demand is less on Sundays as compared to other days of the week.
2. Further, in the month of July, 2019, it was observed that the FSV showed decreasing trend on Mondays (15th and 22nd July, 2019) and Tuesday (23rd July, 2019) instead of Sundays (14th and 21st July, 2019). Also in the month of August, 2019, FSV invariably showed increasing trend on Sundays (4th and 18th August, 2018) and decreasing trend on Monday (5th August, 2019).
3. In the month of September, 2019 also, FSV showed decreasing trend on Mondays (2nd and 23rd September, 2019) instead of Sundays (1st and 22nd August, 2019). In the month of October, 2019 also, FSV showed decreasing trend on Monday (7th October, 2019) and Tuesday (8th October, 2019) instead of Sunday (6th October, 2019).
4. Further, in the months of November, 2019, December, 2019 and January, 2020 FSV invariably showed decreasing trend on Sundays and increasing trend on Mondays.
5. During the analysis for the month of February, 2020, it has been observed that on first Monday (i.e. 3rd February, 2020), FSV showed decreasing trend in comparison to Sunday (i.e. 2nd February, 2020). On analysis of this variation in trends of FSV on 3rd February, 2020, it has been observed as under:
 - i) On 3rd February, 2020, there was increase in purchase on power exchange by some of the States and entities by **16.52 MU** [i.e. Gujarat (7.50 MU), Delhi (2.59 MU), Kerala (1.95 MU), Uttarakhand (1.92 MU), etc.]. There was also marked decrease in purchase on power exchange by some of the States by **22.37 MU** [i.e. Bihar (13.03 MU), Jharkhand (3.32), Rajasthan (2.93), Maharashtra (0.80) etc.] This resulted in decrease in FSV by **5.85 MU** on 3rd February, 2020.

Definitions/ Terminologies used in the Report

1. **MCP** is the price discovered in each of the 15 Minute Time Block. The day is divided in 96 time blocks of 15minutes each.
2. **Area Clearing Price (ACP)** is price discovered in each time block of concerned bid area. The country has been divided into 13 bid areas for the purpose of calculating prices in Power Exchanges.

13 Bid area are as under:

N1:Jammu and Kashmir, Himachal Pradesh, Chandigarh, Haryana; **N2:** Uttar Pradesh, Uttaranchal, Rajasthan, Delhi; **N3:** Punjab; **E1:** West Bengal, Sikkim, Bihar, Jharkhand; **E2:** Odisha; **W1:** Madhya Pradesh; **W2:** Maharashtra, Gujarat, Daman and Diu, Dadar and Nagar Haveli, North Goa; **W3:** Chhattisgarh; **S1:** Andhra Pradesh, Telangana, Karnataka, Pondicherry (Yanam), South Goa; **S2:** Tamil Nadu, Pondicherry (Puducherry), Pondicherry (Karaikal), Pondicherry (Mahe); **S3:** Kerala; **A1:** Tripura, Manipur, Mizoram, Nagaland; **A2:** Assam, Arunachal Pradesh, Meghalaya.

3. **Daily MCP** is the average of MCP of all 96 Time Blocks of the day during which transaction happened.
4. **Average MCP** is the average of daily MCP of the days during the month on which transaction happened.
5. **Average Scheduled Volume** is the average of scheduled volume of the days during the month on which transaction happened.
6. **Day-Ahead Market (DAM)** on the power exchanges are market for electricity where market participants purchase and sell electricity at financially binding day-ahead prices for the following day.
7. **Elasticity** is percentage of change in MCP with respect to change in independent variable viz. peak demand, average purchase bid, average sell bid, generation from coal based plants, generation from hydro based plants, generation from wind based plants and generation from solar plants.
8. **Energy Supplied** is the total energy (MU) available at the States' periphery.
9. **Term Ahead Market (TAM)** on the power exchanges is the market for electricity where market participants buy/sell electricity on a term basis ranging from 3 hours before actual despatch (i.e. intra-day) and up to 11 days in advance. There are 4 types of contracts in TAM, namely; Intra-day, Day Ahead Contingency, Daily and Weekly.