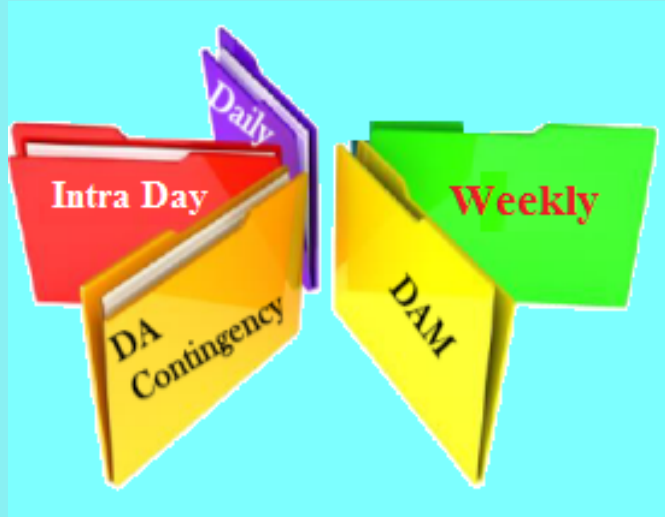




फरवरी, 2021 मासिक मार्केट मॉनिटरिंग रिपोर्ट

Monthly Market Monitoring Report

February, 2021



भारत सरकार/ Government of India
विद्युत मंत्रालय/ Ministry of Power
केन्द्रीय विद्युत प्राधिकरण/ Central Electricity Authority
आर. ए. प्रभाग/ Regulatory Affairs Division
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REPORT FOR MONTH: FEBRUARY, 2021

OVERVIEW OF ELECTRICITY TRANSACTIONS ON POWER EXCHANGES 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 (DAM) in the month of February, 2021 was **5107.19 MU**. The total energy supplied in the country during the month of February, 2021 was 104,115 MU. Thus, the volume of electricity transacted on the power exchanges in DAM was 4.9% of the total energy supplied in the country. The total volume of electricity transacted in DAM during January, 2021 was **5591.70 MU** which was 5.09% of the total energy supplied [109,767 MU] in the country during January, 2021. Similarly, the total volume of electricity transacted in DAM during February, 2020 was **4289.43 MU** which was 4.13 % of the total energy supplied [103,815 MU] in the country during February, 2020.
- 1.2.** The volume of electricity transacted on IEX and PXIL during February, 2021 were **5099.75 MU and 7.44 MU**, respectively, which means that the total volume transacted on IEX was **99.85%** of the total volume on power exchanges. The volume of electricity transacted on IEX and PXIL during January, 2021 were **5584.07 MU and 7.63 MU**, respectively, which means that the total volume transacted on IEX was **99.86 %** of the total volume on power exchanges. Also, the total volume of electricity transacted during February, 2020 on IEX and PXIL was **4289.15 MU and 0.28 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 of February, 2021 was **Rs 3.39/kWh**, which shows an increase of **6.60% and 16.49%** when compared with average MCP's for the month of January, 2021 and February, 2020, which were **Rs 3.18/kWh and Rs 2.91/kWh**, respectively. On PXIL, the average MCP during the month of February, 2021 was **Rs 3.69/kWh**, which shows a decrease of **4.16%** and an increase of **17.52%**, when compared with average MCP's for the month of January, 2021 and February, 2020, which were **Rs 3.85/kWh and Rs 3.14/kWh**, respectively.

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

- 2.1.** A comparison of the Minimum, Maximum and Average of Daily MCP during the month of February, 2021 with that of January, 2021 and February, 2020 is given in

Table- 1A & 1B:**(a) February, 2021 vis- a -vis January, 2021**

Daily MCP (Rs/kWh)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Minimum	2.85	2.66	7.14	2.62	3.19	-17.87
Maximum	4.54	3.85	17.92	4.73	4.71	0.42
Average	3.39	3.18	6.60	3.69	3.85	-4.16

Table: 1A**(b) February, 2021 vis- a –vis February, 2020**

Daily MCP (Rs/kWh)	IEX			PXIL		
	February, 2021	February, 2020	% Change	February, 2021	February, 2020	% Change
Minimum	2.85	2.56	11.33	2.62	2.72	-3.68
Maximum	4.54	3.15	44.13	4.73	3.65	29.59
Average	3.39	2.91	16.49	3.69	3.14	17.52

Table: 1B

2.2. The maximum Area Clearing Price (ACP) of **Rs 8.75/kWh** in IEX was observed in all 13 regions during the time block **09:30 - 09:45 Hrs** on 27th February, 2021. As there was no congestion in transmission system, the MCP for this time-block was also **Rs 8.75/kWh**. However, the Daily MCP in IEX on pan India basis on 27th February, 2021 was Rs 4.54/kWh. Whereas, in PXIL, the maximum ACP of **Rs 13.95/kWh** was observed in all 13 regions during the time periods from **17:45-18:00 Hrs** on 19th February, 2021. As there was no congestion in transmission system, the MCP for above time blocks was also **Rs 13.95/kWh**. However, the Daily MCP in PXIL on 19th February, 2021 was **Rs 3.50/kWh**.

2.3. The minimum ACP of **Rs 1.58/kWh** in IEX was observed in all 13 regions during the time block **22:00-22:15 Hrs** on 11th February, 2021. As there was no congestion in transmission system, the MCP for this time-block was also **Rs 1.58/kWh**. However, the Daily MCP in IEX on pan India basis on 11th February, 2021 was **Rs 3.27/kWh**. Whereas, in PXIL, the minimum ACP of **Rs 2.58/kWh** was observed in all 13 regions on 9th February, 2021 (for time period **16:45-17:00 Hrs** during February, 2021). As no congestion was there in transmission system, the MCP for the above time blocks was also **Rs 2.58/kWh**. However, the Daily MCP in PXIL on 9th February, 2021 were **Rs 4.03/kWh**, respectively.

2.4. A comparison of the Minimum and Maximum Area Clearing Price (ACP) during the months of February, 2021 with that of January, 2021 and February, 2020 is given in Table-2A&2B:

(a) February, 2021 vis- a -vis January, 2021

ACP (Rs/kWh)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Minimum	1.58	1.55	1.94	2.58	1.51	70.86
Maximum	8.75	8.00	9.38	13.95	6.71	107.90

Table: 2A

(b) February, 2021 vis- a- vis February, 2020

ACP (Rs/kWh)	IEX			PXIL		
	February, 2021	February, 2020	% Change	February, 2021	February, 2020	% Change
Minimum	1.58	0.99	59.60	2.58	2.57	0.39
Maximum	8.75	5.00	75.00	13.95	3.65	282.19

Table: 2B

2.5. A comparison of the Minimum, Maximum and Average of Final Scheduled Volume (FSV) of electricity transactions happened on IEX and PXIL for a day during the months of February, 2021 with that of January, 2021 and February, 2020 is given in Table-3A & 3B:

Final Scheduled Volume (MU)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Minimum	152.98	156.75	-2.41	0.09	0.02	350.00
Maximum	203.71	199.03	2.35	0.47	1.22	-61.48
Average	182.13	180.13	1.11	0.27	0.40	-32.50

(a) February, 2021 vis- a- vis January, 2021

Table: 3A

(b) February, 2021 vis- a- vis February, 2020

Final Scheduled Volume (MU)	IEX			PXIL		
	February, 2021	February, 2020	% Change	February, 2021	February, 2020	% Change

Minimum	152.98	126.54	20.89	0.09	0.013	592.31
Maximum	203.71	163.19	24.83	0.47	0.029	1520.69
Average	182.13	147.90	23.14	0.27	0.026	938.46

Table: 3B

2.6. The total volume of electricity transacted in DAM on both the power exchanges during the period April, 2020 to February, 2021 was **54,072.81 MU**. The same was **45,188.78 MU** during the period April, 2019 to February, 2020, which shows an **increase of 19.66 %**.

3. TERM AHEAD MARKET (TAM)

Term Ahead Market (TAM) (on Trade Date Basis)

- 3.1.** The total volume of electricity transacted on both the power exchanges in Term Ahead Market on trade date basis in February, 2021 was **749.56 MU**, out of which, **305.50 MU (40.76 %)** was transacted on IEX and **444.06 MU (59.24%)** was transacted on PXIL.
- 3.2.** The total volume of electricity transacted on both the power exchanges in Term Ahead Market on trade date basis in January, 2021 was **983.44 MU**, out of which, **324.31 MU (32.98 %)** was transacted on IEX and **659.13 MU (67.02%)** was transacted on PXIL.
- 3.3.** Similarly, total volume of electricity transacted during February, 2020 in Term Ahead Market on trade date basis in both the power exchanges was **251.46 MU**, out of which, **221.97 MU (88.27%)** was transacted on IEX and **29.49 MU (11.73%)** was transacted on PXIL.
- 3.4.** With respect to the total energy supplied during the month of February, 2021 in the country, the volume of electricity traded on the power exchanges in TAM on trade date basis represents **0.72%** of the total energy supplied. The same was **0.90 %** in January, 2021 and **0.24 %** in February, 2020.
- 3.5.** The total volume of electricity transacted in TAM **on trade date basis** on both the power exchanges cumulatively during the period April, 2020 to February, 2021 was **7,758.94 MU**, which shows an increase of **10.60 %** as compared to **7,015.19 MU** during the period April, 2019 to February, 2020.
- 3.6.** In the month of February, 2021, there was transmission congestion in IEX of **0.08 MU** in Intraday Contract & **4.04 MU** in Daily/Any day contract, whereas there was transmission congestion of **2.96 MU** in Daily/Any day contract in PXIL during the month of February, 2021.

3.7. The comparison of total volume of electricity transacted on both the power exchanges in Term Ahead Market (TAM) during February, 2021 with January, 2021 and February, 2020 is given in Table- 4A&4B:

(a) February, 2021 vis- a- vis January, 2021 (on trade Date Basis)

Contract Type	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Intra Day (MU)	1.31	1.76	-25.57	14.55	33.35	-56.37
Day Ahead Contingency(MU)	56.71	50.53	12.23	-		
Daily/ Any Day (MU)	247.48	272.02	-9.02	429.51	625.78	-31.36
Weekly (MU)	-			-		

Table: 4A

Contract Type	IEX			PXIL		
	February, 2021	February, 2020	% Change	February, 2021	February, 2020	% Change
Intra Day (MU)	1.31	52.78	-97.52	14.55	18.63	-21.90
Day Ahead Contingency MU)	56.71	38.63	46.80	-	0.38	NA
Daily/ Any Day (MU)	247.48	130.56	89.55	429.51	10.48	3998.38
Weekly (MU)	-	-	NA	-	-	NA

(a) February, 2021 vis- a- vis February, 2020 (on trade Date Basis)

Table: 4B

NA- Not Applicable

Term Ahead Market (TAM) (on delivery Date Basis)

- 3.8.** The total volume of electricity transacted on both the power exchanges in Term Ahead Market on delivery date basis in February, 2021 was **912.62 MU**, out of which, **432.24 MU (47.36 %)** was transacted on IEX and **480.38 MU (52.64%)** was transacted on PXIL.
- 3.9.** The total volume of electricity transacted on both the power exchanges in Term Ahead Market on delivery date basis in January, 2021 was **1150.18 MU**, out of which, **524.08 MU (45.57 %)** was transacted on IEX and **626.10 MU (54.43%)** was transacted on PXIL.
- 3.10.** Similarly, total volume of electricity transacted during February, 2020 in Term Ahead Market on delivery date basis in both the power exchanges was **255.95 MU**, out of which, **226.48 MU (88.49 %)** was transacted on IEX and **29.47MU (11.51 %)** was transacted on PXIL.

- 3.11.** With respect to the total energy supplied during the month of February, 2021 in the country, the volume of electricity traded on the power exchanges in TAM on delivery date basis represents **0.88 %** of the total energy supplied. The same was **1.05 %** in January, 2021 and **0.25%** in February, 2020.
- 3.12.** The total volume of electricity transacted in TAM **on delivery date basis** on both the power exchanges cumulatively during the period April, 2020 to February, 2021 was **8,110.27 MU**, which shows an increase of **16.64 %** as compared to **6,953.08 MU** during the period April, 2019 to February, 2020.
- 3.13.** In the month of February, 2021, there was real time curtailment in IEX of **4.85 MU** in Daily/ Anyday contracts, whereas in PXIL, there was real time curtailment of **2.96 MU** in Daily/ Any day contract during February, 2021.
- 3.14.** The comparison of total volume of electricity transacted in both the power exchanges in Term Ahead Market (TAM) on delivery date basis during February, 2021 with January, 2021 and February, 2020 is given in Table – 4C&4D:

(b) February, 2021 vis- a- vis January, 2021 (on Delivery Date Basis)

Contract Type	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Intra Day (MU)	1.31	1.76	-25.57	14.55	33.35	-56.37
Day Ahead Contingency(MU)	58.26	48.30	20.62	-		
Daily/ Any Day (MU)	372.67	474.02	-21.38	465.83	592.75	-21.41
Weekly (MU)	-	-	NA	-		

Table: 4C

NA- Not Applicable

Contract Type	IEX			PXIL		
	February, 2021	February, 2020	% Change	February, 2021	February, 2020	% Change
Intra Day (MU)	1.31	52.63	-97.51	14.55	18.63	-21.90
Day Ahead Contingency MU)	58.26	42.33	37.63	-	0.38	NA
Daily/ Any Day (MU)	372.67	131.52	183.36	465.83	10.46	4353.44
Weekly (MU)	-	-	-	-		

(b) February, 2021 vis- a- vis February, 2020 (on Delivery Date Basis)

Table: 4D

NA- Not Applicable

4. REAL TIME MARKET (RTM)

The transaction of Electricity in Real Time Market was started from 1st June, 2020 with the approval of the CERC in both the power exchanges - IEX and PXIL. The Final Scheduled Volume (FSV), Daily Market Clearing Prices (MCP), Area Clearing Prices (ACP), Real Time Curtailment and details of Transmission Congestion in Real Time Market during the month of February, 2021 as compared with January, 2021 are as given in table 5A, 5B & 5C:

(i) Final Scheduled Volume:

Final Scheduled Volume (MU)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Total	1118.45	1233.31	-9.31	No Transaction		
Minimum	28.28	21.41	32.09	No Transaction		
Maximum	52.73	55.75	-5.42	No Transaction		
Average	39.94	39.78	0.40	No Transaction		

Table-5A

(ii) Daily Market Clearing Price (MCP):

Daily MCP (Rs/kWh)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Minimum	2.66	2.32	14.66	No Transaction		
Maximum	4.72	3.99	18.30	No Transaction		
Average	3.31	3.02	9.60	No Transaction		

Table-5B

(iii) Area Clearing Price (ACP):

ACP (Rs/kWh)	IEX			PXIL		
	February, 2021	January, 2021	% Change	February, 2021	January, 2021	% Change
Minimum	1.58	0.40	295.00	No Transaction		
Maximum	9.00	9.00	0.00	No Transaction		

Table -5C

5. GREEN TERM AHEAD MARKET (GTAM):

The transaction of electricity in Green Term Ahead Market was started in IEX w.e.f. 21st August, 2020 onwards. The total volume of electricity transacted in Solar Energy Segment in GTAM in Day Ahead Contingency, Intraday, Daily/ Anyday and Weekly contracts during February, 2021 on trade date basis and delivery date basis has been shown in Tables 6A to 6H.

5.1. Solar Energy Segment in GTAM (On Trade date basis)

The Final Scheduled Volume and the Price of electricity transacted in GTAM in IEX during February, 2021 and its comparison with January, 2021 has been shown in Table 6A & 6B below.

(i) Final Scheduled Volume:

Final Scheduled Volume MU)

Solar Energy Contract	Period	Total	Minimum	Maximum	Average
Day Ahead Contingency	February, 2021	35.76	0.15	2.08	1.28
	January, 2021	22.23	0.01	1.56	0.72
	% Change	60.86	1400.00	33.33	77.78
Intraday	February, 2021	1.72	0.05	1.04	0.57
	January, 2021	-	-	-	-
	% Change	NA	NA	NA	NA
Table-6A (continued)					
Daily-Anyday	February, 2021	-	-	-	-
	January, 2021	1.80	1.80	1.80	1.80
	% Change	NA	NA	NA	NA
Weekly	February, 2021	-	-	-	-
	January, 2021	-	-	-	-
	% Change	NA	NA	NA	NA

Table-6A

NA- Not Applicable

(ii) Daily Market Clearing Price (MCP):

Solar Energy Contract	Period	Prices (Rs/kWh)		
		Minimum	Maximum	Average
Day Ahead Contingency	February , 2021	3.54	4.88	4.03
	January, 2021	3.66	5.00	4.21
	%Change	-3.28	-2.40	-4.28
Intraday	February , 2021	4.00	4.50	4.17
	January, 2021	-	-	-
	%Change	NA	NA	NA
Daily-Anyday	February , 2021	-	-	-
	January, 2021	4.50	4.50	4.50
	% Change	NA	NA	NA
Weekly	February , 2021	-	-	-
	January, 2021	-	-	-
	% Change	NA	NA	NA

Table-6B

NA- Not Applicable

Solar Energy Segment in GTAM (On Delivery date basis)

The Final Scheduled Volume and the Price of electricity transacted in GTAM in IEX during February, 2021 and its comparison with January, 2021 has been shown in Table 6C & 6D below.

(i) Final Scheduled Volume:

Solar Energy Contract	Period	Final Scheduled Volume MU)			
		Total	Minimum	Maximum	Average
Day Ahead Contingency	February, 2021	35.89	0.15	2.08	1.28
	January, 2021	21.06	0.01	1.56	0.68
	% Change	70.42	1400.00	33.33	88.24

Intraday	February, 2021	1.72	0.05	1.04	0.57
	January, 2021	-	-	-	-
	% Change	NA	NA	NA	NA
Daily-Anyday	February, 2021	0.40	0.20	0.20	0.20
	January, 2021	1.40	0.20	0.20	0.20
	% Change	-71.43	0.00	0.00	0.00
Weekly	February, 2021	No Transaction			
	January, 2021	No Transaction			

Table-6C

NA- Not Applicable

(ii) Daily Market Clearing Price (MCP):

Solar Energy Contract	Period	Prices (Rs/kWh)		
		Minimum	Maximum	Average
Day Ahead Contingency	February , 2021	3.54	4.88	4.04
	January, 2021	3.66	5.15	4.24
	%Change	-3.28	-5.24	-4.72
Intraday	February , 2021	4.00	4.50	4.17
	January, 2021	-	-	-
	%Change	NA	NA	NA
Daily/Anyday	February , 2021	4.50	4.50	4.50
	January, 2021	4.50	4.50	4.50
	% Change	0.00	0.00	0.00
Weekly	February , 2021	No Transaction		
	January, 2021	No Transaction		

Table-6D

5.2. Non-Solar Energy Segment in GTAM (On Trade date basis)

The total volume of electricity transacted in non-Solar Energy Segment in GTAM in Day Ahead Contingency, Intraday, Daily/ Anyday and Weekly contracts during February, 2021 on trade date basis and delivery date basis has been shown in Tables 6E to 6H.

The Final Scheduled Volume and the Price of electricity transacted in Non-Solar GTAM in IEX during February, 2021 and its comparison with January, 2021 has been shown in Table 6E & 6F below.

(iii) Final Scheduled Volume:

Non-Solar Energy Contract	Period	Final Scheduled Volume MU)			
		Total	Minimum	Maximum	Average
Day Ahead Contingency	February, 2021	56.25	0.28	8.38	2.08
	January, 2021	50.70	0.30	4.69	1.64
	% Change	10.95	-6.67	78.68	26.83
	February, 2021	-	-	-	-
	January, 2021	0.38	0.38	0.38	0.38

Intraday	% Change				
		NA	NA	NA	NA
Daily-Anyday	February, 2021	-	-	-	-
	January, 2021	0.50	0.50	0.50	0.50
	% Change	NA	NA	NA	NA
Weekly	February, 2021	-	-	-	-
	January, 2021	16.80	16.80	16.80	16.80
	% Change	NA	NA	NA	NA

Table-6E

NA- Not Applicable

(iv) Daily Market Clearing Price (MCP) (On Trade date basis):

Non-Solar Energy Contract	Period	Prices (Rs/kWh)		
		Minimum	Maximum	Average
Day Ahead Contingency	February , 2021	3.80	4.99	4.42
	January, 2021	3.80	5.11	4.32
	%Change	0.00	-2.35	2.31
Intraday	February , 2021	-	-	-
	January, 2021	4.35	4.35	4.35
	%Change	NA	NA	NA
Daily-Anyday	February , 2021	-	-	-
	January, 2021	4.01	4.01	4.01
	% Change	NA	NA	NA
Weekly	February , 2021	-	-	-
	January, 2021	4.30	4.30	4.30
	% Change	NA	NA	NA

Table-6F

NA- Not Applicable

Non-Solar Energy Segment in GTAM (On Delivery date basis)

The Final Scheduled Volume and the Price of electricity transacted in GTAM in IEX during February, 2021 and its comparison with January, 2021 has been shown in Table 6G & 6H below.

(iii) Final Scheduled Volume:

Non-Solar Energy Contract	Period	Final Scheduled Volume MU)			
		Total	Minimum	Maximum	Average
Day Ahead Contingency	February, 2021	55.13	0.28	8.38	2.04
	January, 2021	50.12	0.30	4.69	1.62
	% Change	10.00	-6.67	78.68	25.93
	February, 2021	-	-	-	-

Intraday	January, 2021	0.38	0.38	0.38	0.38
	% Change	NA	NA	NA	NA
Daily-Anyday	February, 2021	0.14	0.07	0.07	0.07
	January, 2021	0.36	0.07	0.07	0.07
	% Change	-61.11	0.00	0.00	0.00
Weekly	February, 2021	-	-	-	-
	January, 2021	16.80	2.40	2.40	2.40
	% Change	NA	NA	NA	NA

Table-6G

NA- Not Applicable

(iv) Daily Market Clearing Price (MCP):

Non-Solar Energy Contract	Period	Prices (Rs/kWh)		
		Minimum	Maximum	Average
Day Ahead Contingency	February , 2021	3.80	4.99	4.44
	January, 2021	3.80	5.11	4.30
	%Change	0.00	-2.35	3.26
Intraday	February , 2021	-	-	-
	January, 2021	4.35	4.35	4.35
	%Change	NA	NA	NA
Daily/Anyday	February , 2021	4.01	4.01	4.01
	January, 2021	4.01	4.01	4.01
	% Change	0.00	0.00	0.00
Weekly	February , 2021	-	-	-
	January, 2021	4.30	4.30	4.30
	%Change	NA	NA	NA

Table-6H

NA - Not Applicable

6. BILATRAL TRANSACTIONS:

The total volume of electricity transacted through **Bilateral transactions** in the month of February, 2021 for buy and sell were **5,045.91 MU** and **5,046.04 MU** respectively. The total buy volume of electricity transacted in bilateral market through direct transactions and traders were **1,511.44 MU** and **3,534.47 MU** respectively. Similarly, the total sell volume of electricity transacted in bilateral market through direct transactions and traders were **1,593.12 MU** and **3,452.92 MU** respectively. The details of Bilateral buy and sell Transactions of Electricity happened during February, 2021 have been shown in Tables Below:

Volume (MU)	Buy		Total Buy (MU)	Sell		Total Sell (MU)
	Direct	Traders		Direct	Traders	
Total	1,511.44	3,534.47	5,045.91	1,593.12	3,452.92	5,046.04
Maximum	711.76	669.05	-	292.18	449.99	-
Minimum	0.48	0.40	-	0.19	0.23	-

Table -7A

The region-wise maximum/ minimum volume of electricity for buy and sell happened bilaterally during February, 2021 is given in tables below:

(i) **Region-wise Buy Volume:**

Region-wise Volume (MU)	ER		WR		NR		SR		NER	
	Direct	Trader	Direct	Trader	Direct	Trader	Direct	Trader	Direct	Trader
Total	215.8	515.52	826.8	164.92	110.7	1749.2	304.2	1004.6	53.76	100.07
Maximu	123.4	171.03	711.7	129.88	69.79	448.70	238.1	669.05	53.76	47.45
Minimu	5.20	7.27	2.80	0.40	1.33	30.61	0.48	7.21	53.76	2.35

Table -7B

Region-wise Volume (MU)	ER		WR		NR		SR		NER	
	Direct	Trader	Direct	Trader	Direct	Trader	Direct	Trader	Direct	Trader
Total	400.47	107.82	642.79	1654.0	457.69	1108.6	38.41	552.22	53.76	30.17
Maximu	246.24	75.58	234.63	324.03	292.18	449.99	15.59	406.13	53.76	26.67
Minimum	0.19	0.29	0.32	13.44	1.39	1.23	2.72	1.72	53.76	0.23

(ii) **Region-wise Sell Volume:**

Table -7C

- 6.1.** The **top 5 buyers** on bilateral transaction through direct transactions in the month of February, 2021 are Madhya Pradesh, Telangana, Jharkhand, West Bengal and Rajasthan, which constituted **81.40%** of the market volume. Whereas **top 5 buyers** on bilateral transaction through traders in the month of February, 2021 are Tamil Nadu, Himachal Pradesh, Rajasthan, Punjab and Telangana, which constituted **62.56 %** of the market volume. **[Annexure III]**
- 6.2.** The **top 5 sellers** on bilateral transaction through direct transactions in the month of February, 2021 are Punjab, DVC, RKM_Power, Uttar Pradesh and DB Power, which constituted **66.52%** of the market volume. Whereas **top 5 sellers** on bilateral transaction through traders in the month of February, 2021 are Punjab, SEIL Project-2, Gujarat, Delhi and JPL, which constituted **49.28%** of the market volume. **[Annexure III]**
- 6.3. Deviation Import and Export Volume** - The total volume of Deviation observed in the month of February, 2021 were **1537.24 MU** in import and **1824.43 MU** in export, respectively.
- 6.4.** A comparison of volume of electricity transacted through both the Power Exchanges together in DAM and Bilateral **Buy (i.e. Direct and through traders)** in the month of February, 2021 is shown in **Figure 1:**

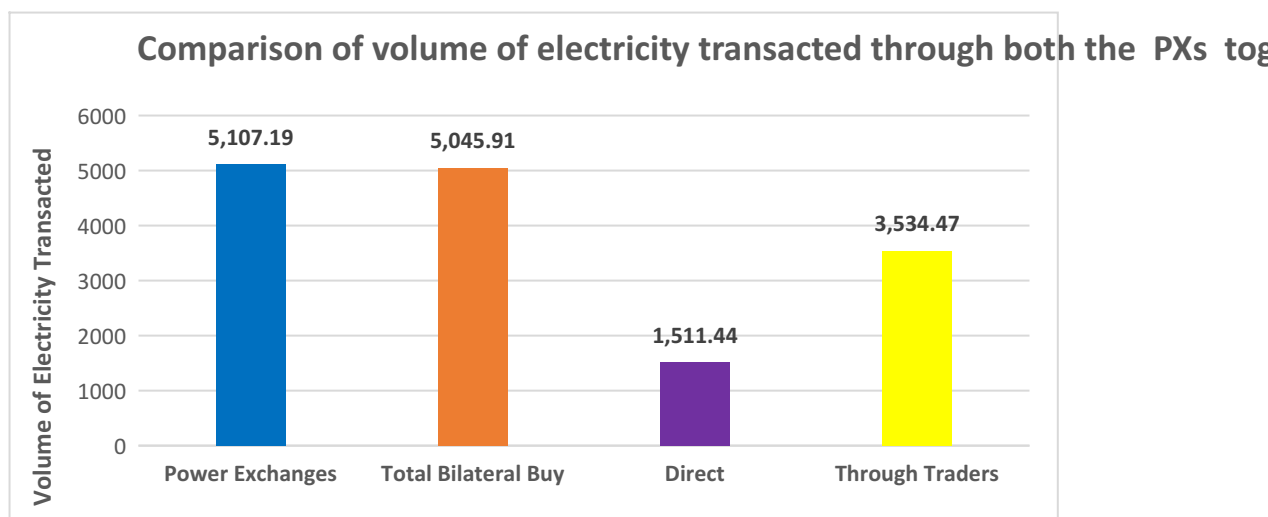


Figure -1

7. ANALYSIS OF MOVEMENT OF PRICES OBSERVED IN DAM DURING FEBRUARY, 2021

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, 2021 month. The observations made are as under:

- 7.1.** 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.
- 7.2.** 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 the total purchase bid, total sell bid, Hydro generation and Solar Generation, whereas all the other variables were found to be insignificant. Further, the regression analysis revealed that the elasticity of the Daily MCP with respect to total purchase bid was **0.63**. 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, 2021.
- 7.3.** The same relationship is visible from the analysis carried out from the plot in **Figure 2**.

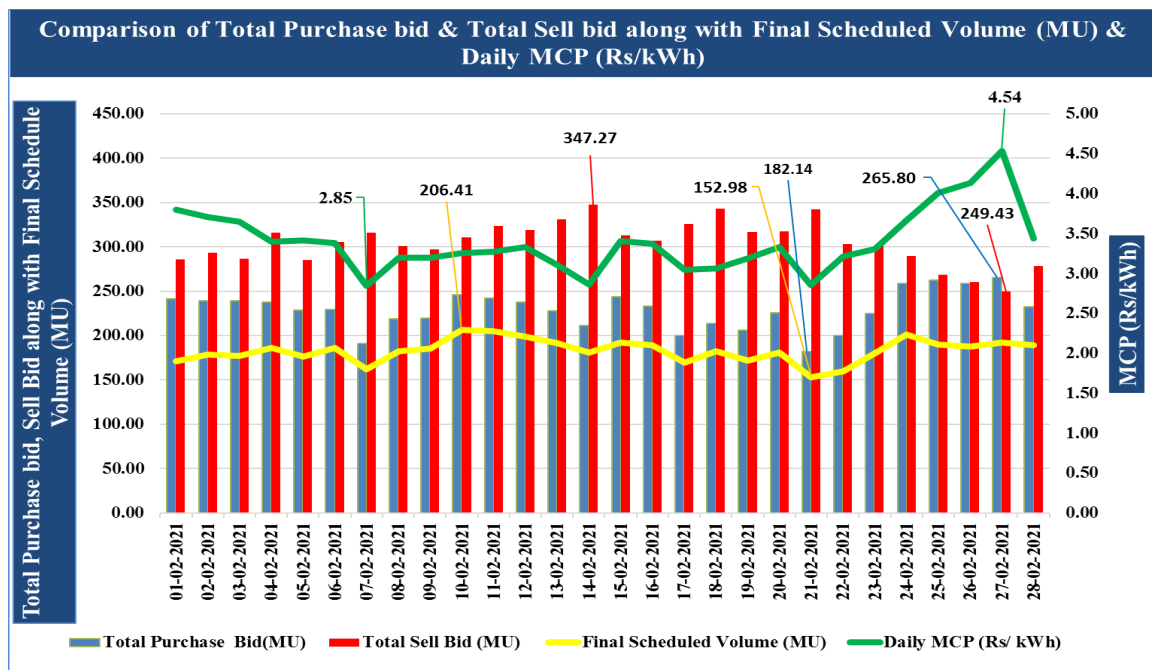


Figure -2

- 7.4. 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.
- 7.5. A comparison of maximum, minimum, daily, non-peak time, peak time MCP is shown in Figure -3. The same are also tabulated in Annexure IV.

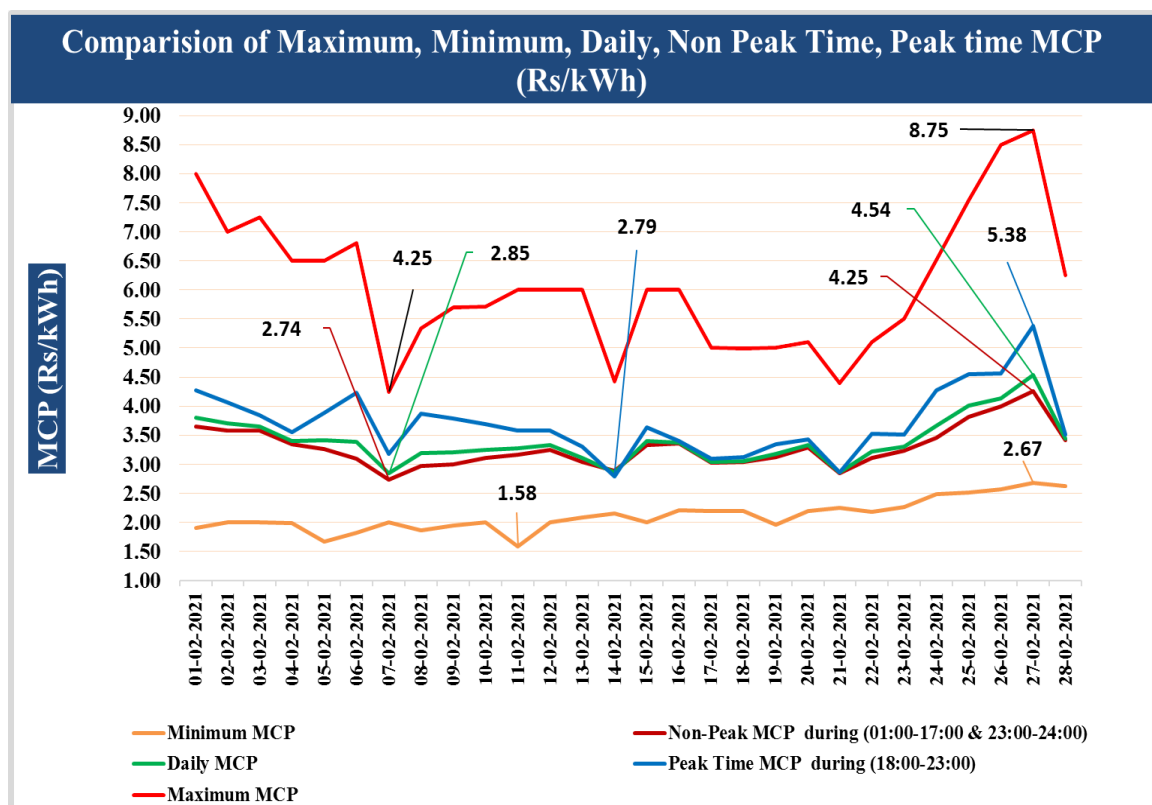


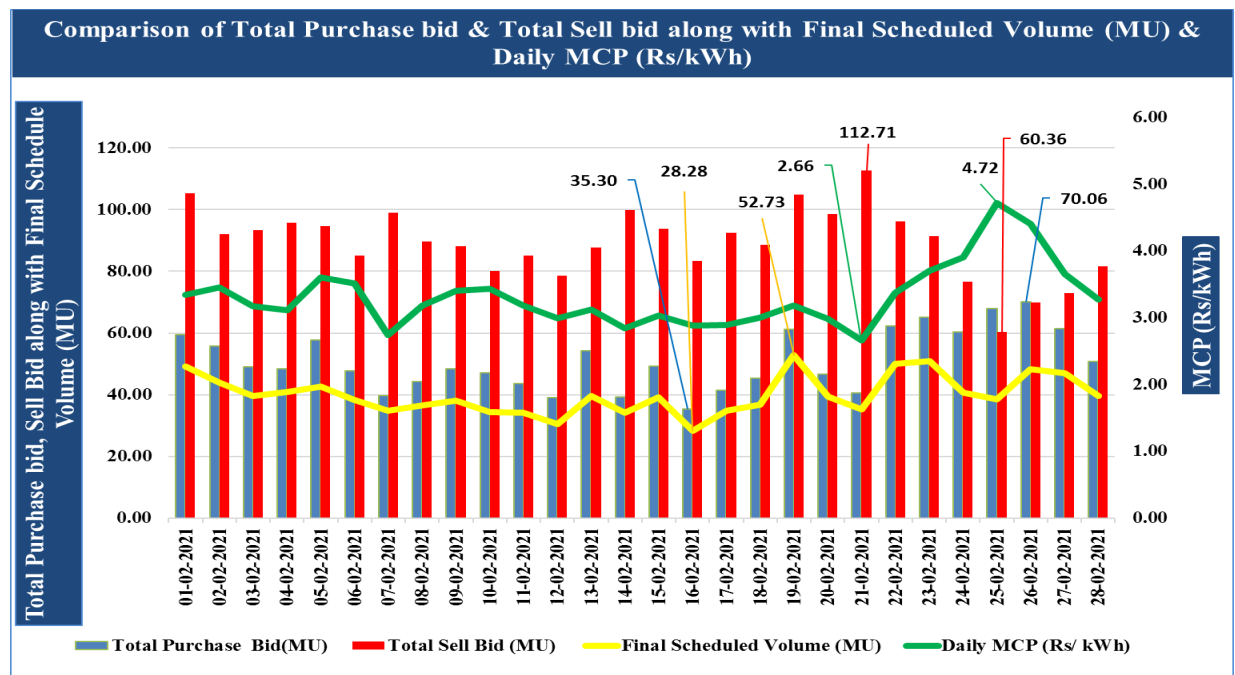
Figure -3

- 7.6. The Purchase Bids and the MCP discovered in each of the 15-minute time block during the month almost followed the same trend [**Annexure V**]. This is also corroborated with the outcome of regression analysis mentioned in at para 7.1 and 7.2 above.
- 7.7. On **16 days** during the month, the maximum FSV occurred during the **time period 06:45-07:30 Hrs. [Annexure VI]**
- 7.8. On **15 days** during the month, the maximum MCP occurred during the **time period 08:30-09:45 Hrs. [Annexure VI]**
- 7.9. On **21 days** during the month, the minimum FSV occurred during the **time period 22:30-24:00 Hrs. [Annexure VI]**
- 7.10. On **23 days** during the month, the minimum MCP occurred during the **time period 03:15-04:15 Hrs. [Annexure VI]**
- 7.11. The maximum demand met during the month of February, 2021 in the country occurred on **02nd February, 2021 at 188.15 GW**, which is 0.79% lower than the maximum demand occurred during **January, 2021 [i.e. 189.64 GW on 30th January, 2021]** and is 6.55% more than the maximum demand occurred during February, 2020 i.e. **[176.58 GW on 18th February, 2020]**.
- 7.12. In the month of February, 2021, there was no congestion in transmission system in IEX, hence, one nation one price was observed for **all 28 days** on IEX. In PXIL also, there was no congestion in transmission system during February, 2021, so One Nation One Price was observed **on all 28 days**. While in the month of January, 2021, there was no congestion in transmission system in IEX, hence, one nation one price was observed for **all 31 days** on IEX. In PXIL, there was no congestion in transmission system during January, 2021, so one nation one price was observed on all **19 days** during which transaction of electricity happened (i.e. 3rd to 8th, 14th, 17th and 21st to 31st January, 2021). Similarly, in the month of February, 2020, One nation One Price was observed in IEX for **28 days** during the month, as there was transmission congestion for 1 day (i.e., 29th February, 2020). Whereas, in PXIL, there was no congestion in transmission system during February, 2020, so one nation one price was observed on all 11 days during which transaction of electricity happened (i.e., 1st to 3rd and 17th to 24th February, 2020).
- 7.13. There was no real time curtailment in IEX and PXIL in February, 2021. Further, there was no real time curtailment in IEX and PXIL in January, 2021. In February, 2020 also, there was no real time curtailment in IEX and PXIL.

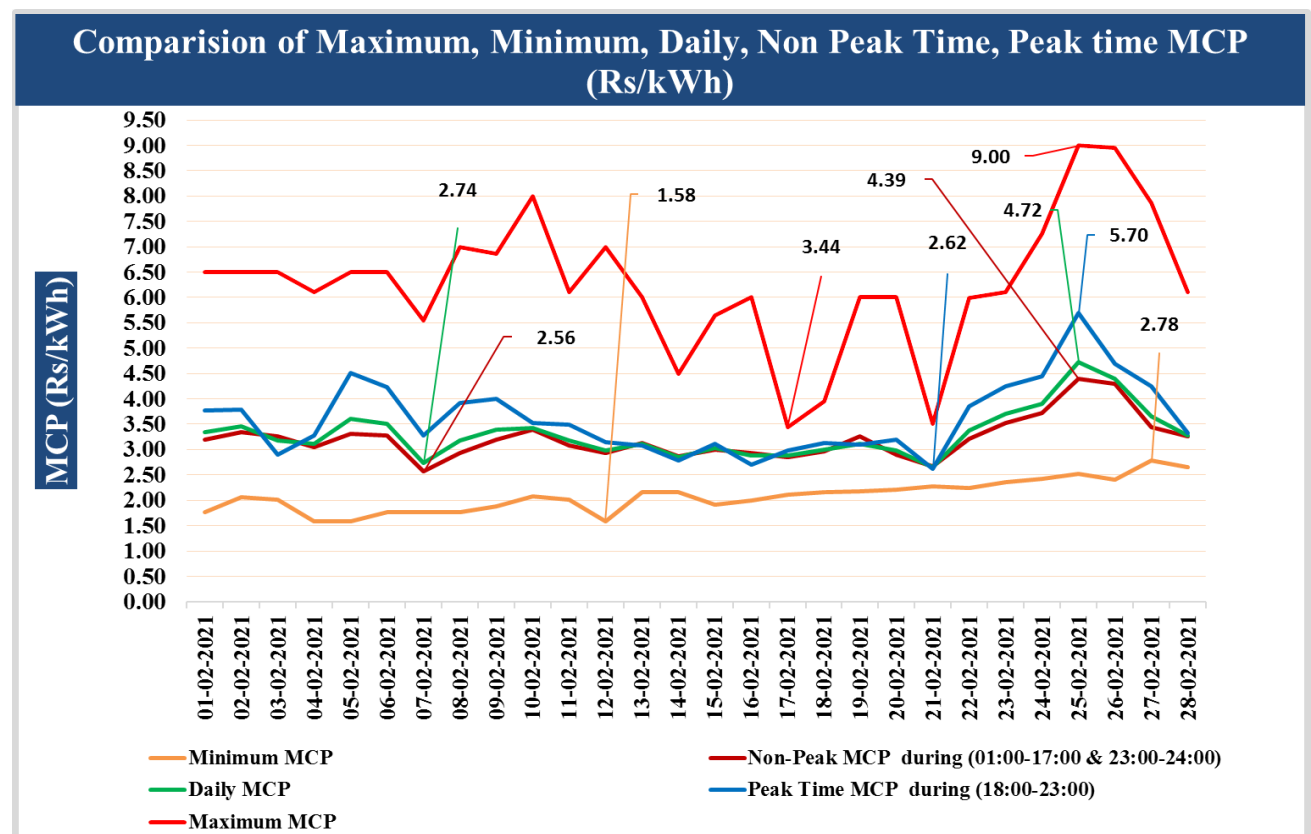
- 7.14.** The **top 10 sellers** on the power exchanges in DAM in the month of February, 2021 are **Uttar Pradesh, West Bengal, Odisha, JITPL, Bihar, Jaypee Nigrie, Delhi, Madhya Pradesh, Sembcorp Gayatri and Karnataka**, which constituted **62.36 %** of the market volume. [Annexure VII]
- 7.15.** The **top 10 purchasers** on the power exchanges in DAM in the month of February, 2021 are **Gujarat, Telangana, Andhra Pradesh, Tamil Nadu, UT of J&K and Ladakh, Rajasthan, Maharashtra, Haryana, Uttar Pradesh and Dadra & Nagar Haveli**, which constituted **85.07 %** of the market volume. [Annexure VII]
- 7.16.** The total volume of electricity purchased by Discoms/Licensees in DAM in the month of February, 2021 was **5,070.18 MU**, which constituted **99.28 %** of total volume of electricity purchased on both the power exchanges.
- 7.17.** Similarly, the total volume of electricity purchased by Discoms/Licensees in DAM in the month of January, 2021 was **5,431.38 MU**, which constituted **97.40 %** of total volume of electricity purchased on both the power exchanges.

8. ANALYSIS OF MOVEMENT OF PRICES OBSERVED INREAL TIME MARKET (RTM) TRANSACTIONS IN FEBRUARY, 2021

- 8.1.** Similar to the regression analysis carried out for Day Ahead Market, the regression analysis for Real Time Market was also done. The regression analysis revealed that the significant variables were the total purchase bid and Sell Bid, whereas all the other variables were found to be insignificant. Further, the regression analysis revealed that the elasticity of the Daily MCP with respect to total Purchase Bid was **0.45**. 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, 2021 for RTM transactions.
- 8.2.** The Purchase Bids and the MCP discovered in each of the 15-minute time block during the month almost followed the same trend [Annexure IX]. This is also corroborated with the outcome of regression analysis mentioned in at para 8.1 above.
- 8.3.** The Total Purchase Bid, Total Sell Bid, Daily MCP and FSV are shown in Figure-4 below:



8.4. A comparison of maximum, minimum, daily, non-peak time, peak time MCP is shown in **Figure-5**. The same are also tabulated in **Annexure VIII**.



8.5. On 8 days during the month, the maximum FSV occurred during the **time period 07:30-10:30 Hrs.** [Annexure X]

- 8.6. On **14 days** during the month, the maximum MCP occurred during the **time period 09:00-10:00 Hrs. [Annexure X]**
- 8.7. On **8 days** during the month, the minimum FSV occurred during the **time period 23:00-00:15 Hrs. [Annexure X]**
- 8.8. On **4 days** during the month, the minimum FSV occurred during the **time period 03:00-04:15 Hrs. [Annexure X]**
- 8.9. There was **no** real time curtailment in IEX in Real Time Market during February, 2021 and January, 2021, whereas, no transaction of electricity happened in PXIL during February, 2021 and January, 2021.
- 8.10. In the month of February, 2021, there was congestion of **0.61 MU** in transmission system in IEX in Real Time Market on account of congestion on **eleven days** (i.e. 4th to 6th, 9th, 12th, 15th to 17th, 21st, 27th to 28th February, 2021), hence, one nation one price was observed for **17 days** in IEX. Whereas, in PXIL, no transaction of electricity happened in February, 2021 in Real Time Market. Further, in the month of January, 2021, there was congestion of **2.29 MU** in transmission system in IEX in Real Time Market on account of congestion on **seven days** (i.e. 1st, 7th, 23rd to 25th, 27th and 28th January, 2021), hence, one nation one price was observed for **24 days** in IEX. Whereas, in PXIL, no transaction of electricity happened in January, 2021 in Real Time Market.
- 8.11. The **top 10 sellers** on the power exchanges in RTM in the month of February, 2021 are **Uttar Pradesh, Odisha, West Bengal, Madhya Pradesh, DVC, Karnataka, RKM Power, Delhi, Sembcorp Gayatri and MB Power**, which constituted **64.74%** of the market volume. [Annexure XI]
- 8.12. The **top 10 purchasers** on the power exchanges in RTM in the month of February, 2021 are **UT of J&K and Ladakh, Telangana, Rajasthan, Gujarat, Andhra Pradesh, Uttar Pradesh, Punjab, Delhi, Odisha and Maharashtra**, which constituted **87.15%** of the market volume. [Annexure XI]
- 8.13. The total volume of electricity purchased by Discoms/Licensees in RTM in the month of February, 2021 was **1,109.84 MU**, which constituted **99.23 %** of total volume of electricity purchased on both the power exchanges.
- 8.14. Similarly, the total volume of electricity purchased by Discoms/Licensees in RTM in the month of January, 2021 was **1,202.77 MU**, which constituted **98.54 %** of total volume of electricity purchased on both the power exchanges.

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

- Source Total Energy supplied: CEA
- Source Generation & other data for Regression: NLDC and IEX

Annexure-I

Final Scheduled Volume, Average MCP and Real-Time Curtailment in Day Ahead Market (DAM) for the months of April, 2020 to February, 2021 of IEX and PXIL

Quarter	Months	Final Scheduled Volume (MU)		Market Clearing Price (Rs/kWh)		Real Time Curtailment (MU)	
		IEX	PXIL	IEX	PXIL	IEX	PXIL
Quarter -I	April, 2020	3,692.04	-	2.42	NA	0	NA
	May, 2020	5,573.73	22.24	2.57	2.58	0	0
	June, 2020	4,174.34	15.03	2.35	2.56	0	0
Total Quarter -I	April - June, 2020	13,440.11	37.27			0	0
Quarter-II	July, 2020	4,486.71	-	2.47	NA	0	NA
	August, 2020	4,484.36	14.10	2.43	2.64	0	0
	September, 2020	4,780.99	60.20	2.69	2.70	0	0
Total Quarter -II	July – September, 2020	13,752.06	74.30			0	0

Quarter-III	October, 2020	5,500.53	49.57	2.74	2.80	0.16	0
	November, 2020	4,860.46	48.62	2.73	2.87	0	0
	December, 2020	5,605.58	5.42	2.83	3.25	0	0
Total Quarter -III	October- December, 2020	15,966.57	103.61			0.16	0
Quarter-IV	January, 2021	5584.07	7.63	3.18	3.85	0	0
	February, 2021	5099.75	7.44	3.39	3.69	0	0
Total April, 2020 - February,		53842.56	230.25			0.16	0

- : No Transaction happened

NA: Not Applicable

Annexure-II

Final Scheduled Volume in Term Ahead Market (TAM) for the months of April, 2020 to February, 2021 of IEX and PXIL (Delivery and Trade date basis)				
Quarter -I	April, 2020	359.94	191.30	551.24
	May, 2020	431.38	284.38	715.76
	June, 2020	100.34	74.88	175.22
Total Quarter -I	April - June, 2020	891.66	550.56	1,442.22
Quarter-II	July, 2020	62.45	28.29	90.74
	August, 2020	120.53	321.22	441.75
	September, 2020	106.64	472.44	579.08
Total Quarter -II	July – September, 2020	289.62	821.95	1,111.57
Quarter-III	October, 2020	219.16	791.06	1010.22
	November, 2020	245.41	872.60	1118.01
	December, 2020	435.72	929.73	1365.45
Total	October-	900.29	2,593.39	3,493.68
Quarter-IV	January, 2021	524.08	626.10	1150.18
	February, 2021	432.24	480.38	912.62
Total April, 2020 - February, 2021		3037.89	5072.38	8110.27

Quarter	Months	Final Scheduled Volume (MU) Trade Date Basis		
		IEX	PXIL	Total
Quarter -I	April, 2020	340.52	282.72	623.24
	May, 2020	377.67	218.35	596.02
	June, 2020	72.28	51.36	123.64
Total Quarter -I	April - June, 2020	790.47	552.43	1342.90
Quarter-II	July, 2020	60.27	117.13	177.4
	August, 2020	146.93	270.72	417.65
	September, 2020	98.30	510.42	608.72
Total Quarter -II	July – September, 2020	305.50	898.27	1203.77
Quarter-III	October, 2020	276.80	973.45	1250.25
	November, 2020	189.00	744.35	933.35
	December, 2020	371.59	924.08	1295.67
Total Quarter -III	October-December, 2020	837.39	2641.88	3479.27
Quarter-IV	January, 2021	324.31	659.13	983.44
	February, 2021	305.50	444.06	749.56
Total April, 2020 - February, 2021		2563.17	5195.77	7758.94

Annexure-III**Top Five Entities (Buyers and Sellers) in Bilateral transactions in the month of February, 2021**

Entity Name	Direct		Entity Name	Through Traders	
	(MU)	Percent		(MU)	Percent
MP	711.76	47.09%	Tamil Nadu	669.05	18.93%
Telangana	238.10	15.75%	Himachal Pradesh	448.70	12.69%
Jharkhand	123.48	8.17%	Rajasthan	410.80	11.62%
West Bengal	87.12	5.76%	Punjab	354.05	10.02%
Rajasthan	69.79	4.62%	Telangana	328.41	9.29%
Total Volume	1230.25	81.40%	Total Volume	2211.01	62.56%
Total Volume in Bilateral	1511.44		Total Volume in Bilateral	3534.47	

(i) Top five Buyers in Bilateral transactions**(ii) Top five Sellers in Bilateral transactions**

Entity Name	Direct		Entity Name	Through Traders	
	(MU)	Percent		(MU)	Percent
Punjab	292.18	18.34%	Punjab	449.99	13.03%
DVC	246.24	15.46%	SEIL Project-2	406.13	11.76%
RKM Power	234.63	14.73%	Gujarat	324.03	9.38%
Uttar Pradesh	149.47	9.38%	Delhi	295.20	8.55%
DB Power	137.17	8.61%	JPL	226.28	6.55%
Total Volume	1059.69	66.52%	Total Volume	1701.63	49.28%
Total Volume in Bilateral	1593.12		Total Volume in Bilateral	3452.92	

Annexure-IV**Peak Time MCP, Non-Peak MCP, Maximum MCP, Minimum MCP, Average MCP and Final Scheduled Volume (MU) in DAM**

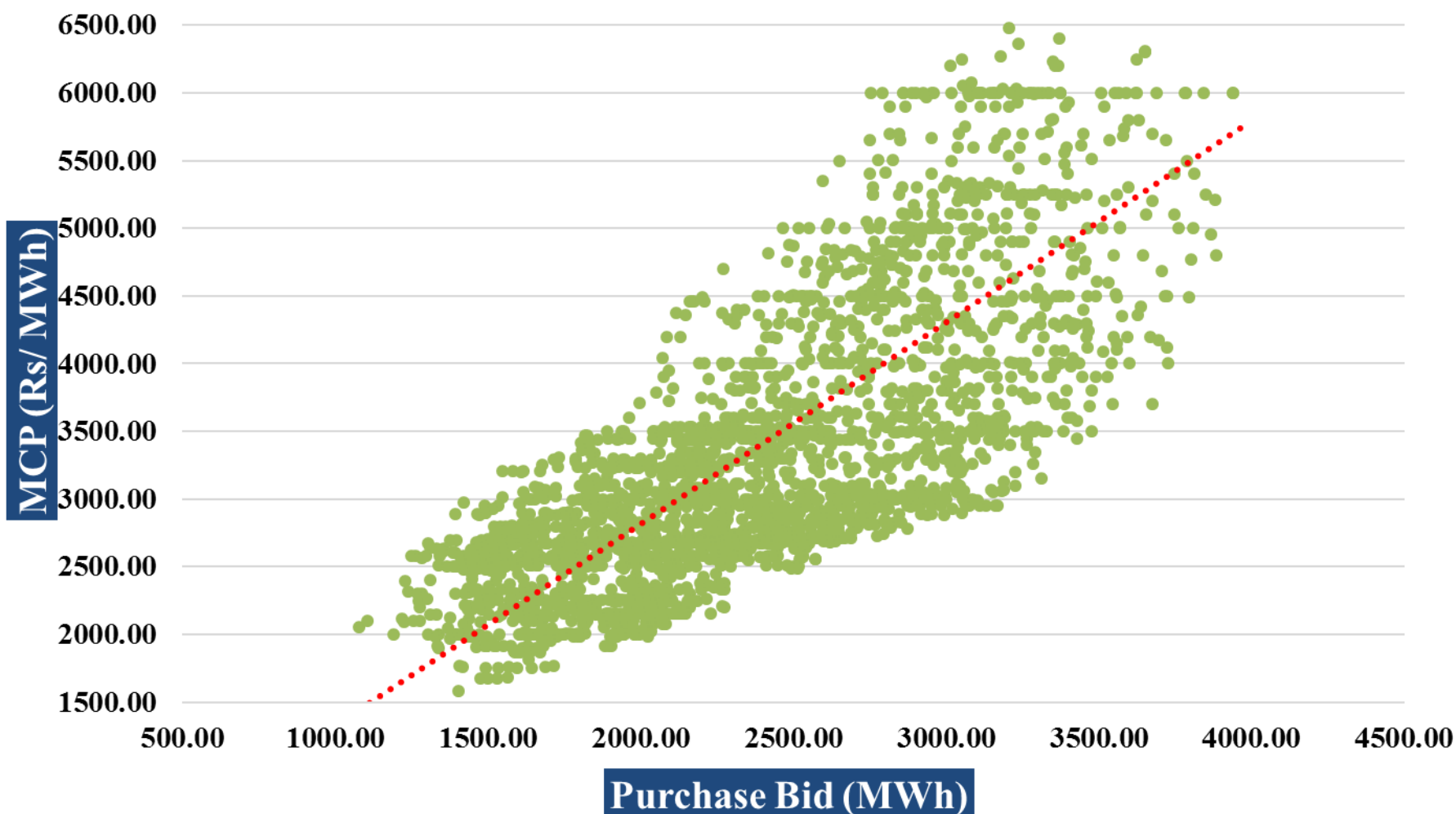
Date	MCP during (01:00-06:00, 23:00-24:00)	MCP during (07:00-10:00)	MCP during (11:00-17:00)	Peak Time MCP during (18:00-23:00)	Non-Peak MCP during (01:00-17:00 & 23:00-24:00)	Maximum MCP	Minimum MCP	Average MCP	Final Scheduled Volume (MU)
01-02-2021	2.19	5.47	4.06	4.27	3.65	8.00	1.91	3.80	170.91
02-02-2021	2.17	5.26	4.04	4.07	3.58	7.00	2.00	3.70	178.25
03-02-2021	2.23	5.54	3.82	3.84	3.59	7.25	2.00	3.65	177.20
04-02-2021	2.23	4.96	3.52	3.56	3.34	6.50	1.99	3.39	186.16
05-02-2021	1.90	4.93	3.65	3.89	3.26	6.50	1.67	3.41	176.08
06-02-2021	2.06	4.71	3.21	4.24	3.10	6.81	1.82	3.38	186.06
07-02-2021	2.18	3.12	3.07	3.17	2.74	4.25	2.00	2.85	161.80
08-02-2021	2.06	4.17	3.18	3.87	2.97	5.33	1.87	3.19	182.23
09-02-2021	2.10	4.29	3.17	3.79	3.00	5.70	1.95	3.20	185.59
10-02-2021	2.29	4.55	3.09	3.69	3.10	5.71	2.00	3.25	206.41
11-02-2021	2.17	4.81	3.23	3.58	3.17	6.00	1.58	3.27	204.98
12-02-2021	2.29	4.98	3.21	3.58	3.25	6.00	2.00	3.33	198.72
13-02-2021	2.31	4.32	3.04	3.31	3.04	6.00	2.09	3.11	191.16
14-02-2021	2.33	3.84	2.91	2.79	2.89	4.43	2.15	2.86	180.64
15-02-2021	2.33	4.80	3.48	3.64	3.33	6.00	2.00	3.40	192.17
16-02-2021	2.50	4.80	3.40	3.40	3.36	6.00	2.21	3.37	188.91
17-02-2021	2.40	4.09	3.05	3.10	3.03	5.00	2.19	3.04	169.65
18-02-2021	2.37	3.94	3.18	3.13	3.04	5.00	2.19	3.06	182.12
19-02-2021	2.30	4.03	3.44	3.35	3.13	5.01	1.97	3.18	171.55
20-02-2021	2.46	4.39	3.51	3.42	3.30	5.10	2.19	3.33	180.84
21-02-2021	2.44	3.38	2.96	2.86	2.85	4.40	2.25	2.85	152.98
22-02-2021	2.39	3.70	3.50	3.53	3.11	5.10	2.19	3.22	159.93
23-02-2021	2.52	4.07	3.48	3.51	3.24	5.50	2.26	3.31	179.76
24-02-2021	2.62	4.46	3.73	4.28	3.46	6.52	2.48	3.67	201.29
25-02-2021	2.70	5.40	4.04	4.56	3.82	7.54	2.51	4.01	189.88
26-02-2021	2.72	6.16	4.02	4.56	3.99	8.50	2.57	4.13	187.36
27-02-2021	2.87	6.43	4.40	5.38	4.25	8.75	2.67	4.54	192.19
28-02-2021	3.09	4.66	3.02	3.51	3.41	6.25	2.63	3.44	189.36
Maximum	3.09	6.43	4.40	5.38	4.25	8.75	2.67	4.54	206.41
Minimum	1.90	3.12	2.91	2.79	2.74	4.25	1.58	2.85	152.98
Average	2.37	4.62	3.44	3.71	3.28	6.08	2.12	3.39	183.01

MCP: Market Clearing Price (Rs/kWh)

FSV: Final Scheduled Volume (MU)

Annexure-V

Comparison of MCP w.r.t. Purchase Bid for 2,688 Time Blocks during the month of February, 2021



Time Blocks during the Month [96 time blocks in a day x 28 days = 2,688]

Annexure-VI**Maximum Final Schedule Volume (FSV), Minimum FSV, Maximum Market Clearing Price (MCP) and Minimum MCP in DAM**

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
01-02-2021	07:00 - 07:15	2.69	08:45 - 09:00	8.00	00:15 - 00:30	0.92	04:00 - 04:15	1.91
02-02-2021	06:45 - 07:00	2.76	09:30 - 09:45	7.00	23:30 - 23:45	0.92	03:45 - 04:00	2.00
03-02-2021	06:45 - 07:00	2.69	08:30 - 08:45	7.25	23:30 - 23:45	0.96	04:00 - 04:15	2.00
04-02-2021	06:45 - 07:00	2.73	08:30 - 08:45	6.50	22:45 - 23:00	1.04	04:00 - 04:15	1.99
05-02-2021	06:45 - 07:00	2.77	08:30 - 08:45	6.50	23:45 - 24:00	0.90	02:45 - 03:00	1.67
06-02-2021	06:45 - 07:00	2.85	18:30 - 18:45	6.81	23:00 - 23:15	1.15	02:45 - 03:00	1.82
07-02-2021	16:30 - 16:45	2.63	18:45 - 19:00	4.25	22:45 - 23:00	0.88	21:45 - 22:00	2.00
08-02-2021	07:15 - 07:30	2.94	18:45 - 19:00	5.33	22:30 - 22:45	1.12	03:45 - 04:00	1.87
09-02-2021	07:30 - 07:45	2.94	18:45 - 19:00	5.70	22:45 - 23:00	1.09	03:45 - 04:00	1.95
10-02-2021	07:15 - 07:30	3.08	18:45 - 19:00	5.71	22:30 - 22:45	1.33	03:45 - 04:00	2.00
11-02-2021	07:15 - 07:30	3.15	08:30 - 08:45	6.00	22:00 - 22:15	1.22	22:00 - 22:15	1.58
12-02-2021	07:15 - 07:30	3.25	09:15 - 09:30	6.00	22:30 - 22:45	1.29	03:15 - 03:30	2.00
13-02-2021	07:30 - 07:45	3.26	07:45 - 08:00	6.00	22:30 - 22:45	1.19	03:45 - 04:00	2.09
14-02-2021	07:15 - 07:30	3.30	07:45 - 08:00	4.43	22:30 - 22:45	1.16	03:15 - 03:30	2.15
15-02-2021	07:15 - 07:30	3.10	09:15 - 09:30	6.00	22:15 - 22:30	1.13	03:45 - 04:00	2.00
16-02-2021	07:30 - 07:45	3.04	09:15 - 09:30	6.00	22:30 - 22:45	1.14	03:45 - 04:00	2.21
17-02-2021	07:15 - 07:30	2.79	09:15 - 09:30	5.00	22:30 - 22:45	0.97	03:45 - 04:00	2.19
18-02-2021	07:30 - 07:45	2.86	09:15 - 09:30	5.00	22:15 - 22:30	1.07	03:45 - 04:00	2.19
19-02-2021	16:30 - 16:45	2.84	09:15 - 09:30	5.01	23:00 - 23:15	1.08	03:45 - 04:00	1.97
20-02-2021	06:45 - 07:00	2.91	08:45 - 09:00	5.10	22:00 - 22:15	1.13	04:00 - 04:15	2.19
21-02-2021	07:45 - 08:00	2.58	08:15 - 08:30	4.40	22:45 - 23:00	0.95	03:45 - 04:00	2.25
22-02-2021	07:45 - 08:00	2.62	18:45 - 19:00	5.10	22:45 - 23:00	0.90	03:15 - 03:30	2.19
23-02-2021	06:15 - 06:30	2.54	18:45 - 19:00	5.50	22:30 - 22:45	1.08	03:45 - 04:00	2.26
24-02-2021	07:15 - 07:30	2.69	18:45 - 19:00	6.52	22:15 - 22:30	1.40	03:45 - 04:00	2.48
25-02-2021	06:45 - 07:00	2.61	18:45 - 19:00	7.54	22:15 - 22:30	1.50	03:45 - 04:00	2.51
26-02-2021	06:30 - 06:45	2.66	09:15 - 09:30	8.50	22:30 - 22:45	1.32	03:45 - 04:00	2.57
27-02-2021	06:15 - 06:30	2.67	09:30 - 09:45	8.75	22:30 - 22:45	1.47	03:45 - 04:00	2.67
28-02-2021	07:30 - 07:45	2.95	06:45 - 07:00	6.25	22:30 - 22:45	1.26	13:45 - 14:00	2.63

MCP: Market Clearing Price (Rs/kWh)**FSV: Final Scheduled Volume (MU)**

Annexure-VII**Sellers and Purchasers in Day Ahead Market (DAM) in the month of February, 2021**

S. No.	Entity Name	Sell		Entity Name	Purchase	
		(MU)	Percent (%)		(MU)	Percent (%)
1.	Uttar Pradesh	878.80	17.21	Gujarat	1274.94	24.96
2.	West Bengal	494.45	9.68	Telangana	906.13	17.74
3.	Orissa	447.55	8.76	Andhra Pradesh	464.15	9.09
4.	JITPL	385.17	7.54	Tamilnadu	442.32	8.66
5.	Bihar	205.96	4.03	J&K	334.82	6.56
6.	Jaypee Nigrie	178.67	3.50	Rajasthan	295.75	5.79
7.	Delhi	165.64	3.24	Maharashtra	220.60	4.32
8.	Madhya Pradesh	158.59	3.11	Haryana	163.09	3.19
9.	Sembcorp Gayatri	141.42	2.77	Uttar Pradesh	138.46	2.71
10	Karnataka	128.42	2.51	Dadra & Nagar Haveli	104.49	2.05
11	Rajasthan	124.21	2.43	Punjab	100.39	1.97
12	Jindal Power	110.59	2.17	Chhattisgarh	95.40	1.87
13	Teesta -3	102.39	2.00	Delhi	92.43	1.81
14	Jindal Power Ltd. Stg-II	101.78	1.99	Uttarakhand	76.92	1.51
15	GMR Warora	100.45	1.97	Madhya Pradesh	71.72	1.40
16	Adani Power STG2	100.03	1.96	Himachal Pradesh	55.21	1.08
17	Maharashtra	95.18	1.86	Karnataka	46.88	0.92
18	Assam	93.90	1.84	Assam	39.66	0.78
19	Raigarh Energy Ltd.	91.64	1.79	ArcelorMittal Nippon steel	37.01	0.72
20	DB Power	89.54	1.75	Bihar	35.70	0.70
21	Raipur Energen	78.14	1.53	Jharkhand	30.27	0.59
22	MB Power	74.98	1.47	Daman & Diu	23.23	0.45
23	Thermal Powertech	58.50	1.15	Kerala	18.73	0.37
24	Essar Power MP Ltd	54.32	1.06	Orissa	15.06	0.29
25	Haryana	42.29	0.83	Goa SR	5.90	0.12
26	Telangana	41.77	0.82	Meghalaya	4.93	0.10
27	Himachal Pradesh	34.19	0.67	Goa WR	4.57	0.09
28	Maruti Clean Coal Power	33.89	0.66	Chandigarh	3.29	0.06
29	Adhunik Power	31.16	0.61	West Bengal	2.99	0.06
30	Tripura	29.78	0.58	Arunachal Pradesh	2.13	0.04
31	Kerala	28.58	0.56			
32	SKS Power	28.33	0.55			
33	Goa WR	23.96	0.47			
34	Chhattisgarh	22.78	0.45			
35	RKM Power	22.61	0.44			
36	Jhabua Power	21.33	0.42			

37	Spectrum Coal	19.63	0.38			
38	Andhra Pradesh	18.38	0.36			
39	ACBIL	17.98	0.35			
40	GMR Kamalanga	17.06	0.33			
41	BALCO 2	16.81	0.33			
42	Gujarat	16.55	0.32			
43	Bongaigaon	16.20	0.32			
44	Jharkhand	15.50	0.30			
45	Tamilnadu	13.01	0.25			
46	Korba Stg 3	12.27	0.24			
47	Karcham Wangtoo	10.51	0.21			
48	Punjab	10.41	0.20			
49	Singoli Bhagwati	9.43	0.18			
50	AD Hydro	9.16	0.18			
51	NTPL	8.75	0.17			
52	Sainj HEP	8.01	0.16			
53	NLC TPS-II	6.91	0.14			
54	Ramagundam Stg-1	6.75	0.13			
55	IL&FS	5.93	0.12			
56	Chandigarh	5.76	0.11			
57	DVC	5.69	0.11			
58	KSK Mahanadi	5.42	0.11			
59	Dikchu	4.23	0.08			
60	Torrent Power	3.85	0.08			
61	Arunachal Pradesh	3.70	0.07			
62	Sikkim	3.27	0.06			
63	Mizoram	3.12	0.06			
64	Farakka Stg 3	2.99	0.06			
65	RGPPPL	1.60	0.03			
66	Jorethang	1.14	0.02			
67	NLC	1.07	0.02			
68	Tashiding HEP	1.00	0.02			
69	Ramagundam Stg-3	0.84	0.02			
70	Dhariwal	0.82	0.02			
71	NLC TPS-II Stg-2	0.73	0.01			
72	Lanco Budhil	0.46	0.01			
73	J&K	0.41	0.01			
74	Palatana	0.29	0.01			
75	Nagaland	0.19	0.00			
76	NLC TPS-II Expn	0.16	0.00			
77	Chuzachen	0.10	0.00			
78	Khargone STPP	0.08	0.00			
79	Talcher	0.02	0.00			
80	Kahalgaon	0.01	0.00			
81	Farakka	0.01	0.00			

	Total Volume of top 10	3,184.68	62.36%	Total Volume of top 10	4,344.75	85.07%
	Total Volume in PXs	5,107.19		Total Volume in PXs	5,107.19	

Peak Time MCP, Non-Peak MCP, Maximum MCP, Minimum MCP, Average MCP and Final Scheduled Volume (MU) in RTM

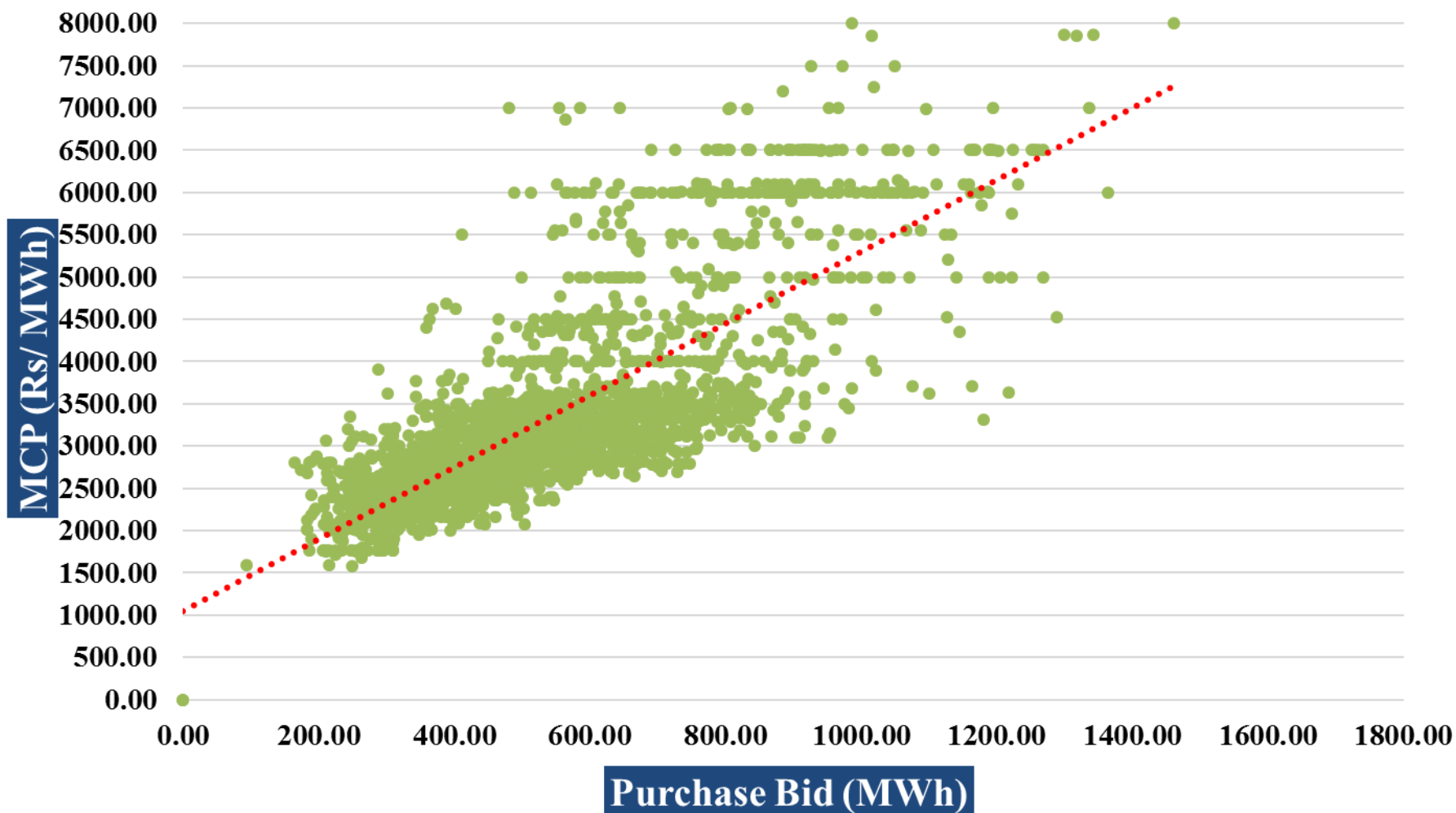
Date	MCP during (01:00-06:00, 23:00-24:00)	MCP during (07:00-10:00)	MCP during (11:00-17:00)	Peak Time MCP during	Non-Peak MCP during (01:00-17:00)	Maximum MCP	Minimum MCP	Average MCP	Final Scheduled
01-02-2021	2.03	4.73	3.47	3.78	3.19	6.50	1.76	3.34	49.17
02-02-2021	2.36	5.17	3.27	3.79	3.34	6.50	2.06	3.45	44.02
03-02-2021	2.32	5.28	3.06	2.90	3.26	6.50	2.01	3.17	39.53
04-02-2021	2.17	4.55	3.08	3.28	3.05	6.10	1.59	3.11	40.86
05-02-2021	2.00	5.05	3.61	4.52	3.30	6.50	1.59	3.61	42.72
06-02-2021	2.31	4.64	3.47	4.23	3.28	6.50	1.76	3.51	38.22
07-02-2021	2.19	3.05	2.66	3.28	2.56	5.56	1.77	2.74	34.87
08-02-2021	2.09	3.29	3.57	3.92	2.93	7.00	1.76	3.18	36.59
09-02-2021	2.35	4.28	3.42	4.00	3.20	6.86	1.88	3.40	38.02
10-02-2021	2.39	4.93	3.53	3.52	3.40	8.00	2.08	3.43	34.41
11-02-2021	2.38	4.32	3.07	3.49	3.08	6.10	2.01	3.18	34.18
12-02-2021	2.23	3.74	3.18	3.15	2.93	7.00	1.58	2.99	30.43
13-02-2021	2.50	4.39	3.05	3.08	3.13	6.00	2.16	3.12	39.49
14-02-2021	2.58	3.45	2.81	2.78	2.86	4.50	2.16	2.84	34.11
15-02-2021	2.32	3.78	3.23	3.12	3.00	5.65	1.92	3.03	39.25
16-02-2021	2.28	3.89	3.06	2.70	2.94	6.00	2.00	2.88	28.28
17-02-2021	2.44	3.24	3.06	2.98	2.86	3.44	2.11	2.89	34.87
18-02-2021	2.49	3.39	3.18	3.13	2.96	3.95	2.16	3.00	36.84
19-02-2021	2.44	3.78	3.80	3.10	3.27	6.00	2.00	3.11	52.73
20-02-2021	2.35	4.02	2.82	3.20	2.90	6.00	2.21	2.98	39.47
21-02-2021	2.42	3.12	2.65	2.62	2.67	3.50	2.28	2.66	35.27
22-02-2021	2.47	4.24	3.35	3.85	3.21	6.00	2.25	3.37	50.03
23-02-2021	2.70	5.32	3.31	4.24	3.52	6.11	2.36	3.70	50.90
24-02-2021	2.72	5.31	3.81	4.45	3.72	7.25	2.42	3.90	40.62
25-02-2021	2.81	6.29	4.90	5.70	4.39	9.00	2.51	4.72	38.54
26-02-2021	2.88	6.14	4.68	4.69	4.30	8.96	2.40	4.40	48.34
27-02-2021	3.09	4.62	3.13	4.25	3.45	7.87	2.78	3.65	47.04
28-02-2021	3.15	3.87	3.02	3.32	3.26	6.10	2.65	3.27	39.65
Maximum	3.15	6.29	4.90	5.70	4.39	9.00	2.78	4.72	52.73
Minimum	2.00	3.05	2.65	2.62	2.56	3.44	1.58	2.66	28.28
Average	2.44	4.35	3.33	3.61	3.21	6.27	2.08	3.31	39.94

MCP: Market Clearing Price (Rs/kWh)

FSV: Final Scheduled Volume (MU)

Annexure-IX

Comparison of MCP w.r.t. Purchase Bid for 2,688 Time Blocks during the month of February, 2021



Time Blocks during the Month [96 time blocks in a day x 28 days = 2,688]

Maximum Final Schedule Volume (FSV), Minimum FSV, Maximum Market Clearing Price (MCP) and Minimum MCP in RTM

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
01-02-2021	09:45-10:00	0.97	09:15-09:30	6.50	03:00-03:15	0.23	04:30-04:45	1.76
02-02-2021	19:30-19:45	0.82	09:00-09:15	6.50	23:45-24:00	0.20	01:30-01:45	2.06
03-02-2021	08:00-08:15	0.80	09:00-09:15	6.50	20:30-20:45	0.21	23:45-24:00	2.01
04-02-2021	16:45-17:00	0.69	09:15-09:30	6.10	23:00-23:15	0.18	23:30-23:45	1.59
05-02-2021	18:00-18:15	0.86	18:45-19:00	6.50	00:00-00:15	0.08	00:00-00:15	1.59
06-02-2021	17:30-17:45	0.73	18:45-19:00	6.50	22:30-22:45	0.20	02:30-02:45	1.76
07-02-2021	07:30-07:45	0.58	19:15-19:30	5.56	00:00-00:15	0.18	01:15-01:30	1.77
08-02-2021	16:45-17:00	0.69	18:30-18:45	7.00	00:00-00:15	0.17	03:15-03:30	1.76
09-02-2021	08:30-08:45	0.67	09:30-09:45	6.86	01:15-01:30	0.21	01:15-01:30	1.88
10-02-2021	17:15-17:30	0.54	09:30-09:45	8.00	06:45-07:00	0.21	04:00-04:15	2.08
11-02-2021	11:30-11:45	0.66	07:15-07:30	6.10	00:15-00:30	0.19	23:45-24:00	2.01
12-02-2021	14:30-14:45	0.53	09:15-09:30	7.00	00:00-00:15	0.15	03:00-03:15	1.58
13-02-2021	18:30-18:45	0.65	07:30-07:45	6.00	06:45-07:00	0.18	03:30-03:45	2.16
14-02-2021	12:15-12:30	0.56	07:15-07:30	4.50	03:45-04:00	0.16	03:45-04:00	2.16
15-02-2021	12:30-12:45	0.76	09:30-09:45	5.65	06:30-06:45	0.12	02:30-02:45	1.92
16-02-2021	19:30-19:45	0.53	09:30-09:45	6.00	06:00-06:15	0.17	01:45-02:00	2.00
17-02-2021	11:45-12:00	0.59	06:45-07:00	3.44	03:15-03:30	0.18	04:45-05:00	2.11
18-02-2021	10:30-10:45	0.63	09:45-10:00	3.95	07:15-07:30	0.19	02:00-02:15	2.16
19-02-2021	11:00-11:15	1.13	09:30-09:45	6.00	23:30-23:45	0.27	02:00-02:15	2.00
20-02-2021	07:30-07:45	0.83	08:30-08:45	6.00	23:15-23:30	0.17	23:45-24:00	2.21
21-02-2021	10:00-10:15	0.59	09:15-09:30	3.50	21:45-22:00	0.22	03:30-03:45	2.28
22-02-2021	19:45-20:00	0.82	09:30-09:45	6.00	01:00-01:15	0.25	01:45-02:00	2.25
23-02-2021	08:00-08:15	0.77	19:00-19:15	6.11	06:15-06:30	0.37	03:45-04:00	2.36
24-02-2021	12:30-12:45	0.67	19:30-19:45	7.25	03:15-03:30	0.23	02:45-03:00	2.42
25-02-2021	17:15-17:30	0.67	10:30-10:45	9.00	06:45-07:00	0.20	00:45-01:00	2.51
26-02-2021	17:45-18:00	0.80	09:30-09:45	8.96	04:15-04:30	0.27	04:00-04:15	2.40
27-02-2021	19:15-19:30	0.73	19:00-19:15	7.87	03:30-03:45	0.29	03:00-03:15	2.78
28-02-2021	10:15-10:30	0.61	06:45-07:00	6.10	21:45-22:00	0.21	12:45-13:00	2.65

MCP: Market Clearing Price (Rs/kWh)**FSV: Final Scheduled Volume (MU)**

Annexure-XI

		Sell		Purchase		
Sellers and Purchasers in Real Time Market (RTM) in the month of February, 2021						
	Uttar Pradesh	130.75	11.69%			
2.	Orissa	123.49	11.04%	Uttar Pradesh and Ladakh	205.82	22.47%
3.	West Bengal	103.10	9.22%	Rajasthan	112.75	10.08%
4.	Madhya Pradesh	74.46	6.66%	Gujarat	88.30	7.90%
5.	DVC	68.01	6.08%	Andhra Pradesh	60.49	5.41%
6.	Karnataka	59.62	5.33%	Uttar Pradesh	33.94	3.03%
7.	RKM Power	59.40	5.31%	Punjab	33.74	3.02%
8.	Delhi	36.75	3.29%	Delhi	33.63	3.01%
9.	Sembcorp Gayatri	36.71	3.28%	Orissa	27.91	2.50%
10	MB Power	31.82	2.85%	Maharashtra	26.82	2.40%
11	Tripura	28.49	2.55%	Tamilnadu	20.81	1.86%
12	NLC TPS-II	27.55	2.46%	Bihar	19.35	1.73%
13	Rajasthan	25.11	2.24%	Chhhttisgarh	19.33	1.73%
14	NLC TPS-II Stg-2	23.92	2.14%	West Bengal	15.29	1.37%
15	Chhhttisgarh	19.87	1.78%	Himachal Pradesh	13.20	1.18%
16	Kameng HEP	19.39	1.73%	Haryana	11.75	1.05%
17	Manipur	17.26	1.54%	Kerala	8.79	0.79%
18	NTPL	16.61	1.48%	Assam	5.88	0.53%
19	Meenakshi Energy	14.25	1.27%	Raigarh Energy Ltd.	5.23	0.47%
20	Maharashtra	13.55	1.21%	Dadra & Nagar Haveli	5.12	0.46%
21	Jindal Power Ltd. Stg-II	13.13	1.17%	Madhya Pradesh	3.93	0.35%
22	GMR Warora	12.14	1.09%	Meghalaya	2.84	0.25%
23	Jhabua Power	9.78	0.87%	Karnataka	2.51	0.22%
24	Thermal Powertech	9.74	0.87%	Raipur Energen	2.04	0.18%
25	NLC	8.61	0.77%	Jharkhand	1.77	0.16%
26	Himachal Pradesh	8.07	0.72%	Uttarakhand	1.28	0.11%
27	Bihar	7.54	0.67%	ArcelorMittal Nippon steel	1.26	0.11%
28	Adani Power STG2	7.11	0.64%	Manipur	0.87	0.08%
29	Kerala	6.33	0.57%	Goa SR	0.81	0.07%
30	NTPC Kudgi	6.02	0.54%	Goa WR	0.77	0.07%
31	Telangana	4.90	0.44%	Daman & Diu	0.51	0.05%
32	Bongaigaon	4.84	0.43%	DVC	0.12	0.01%
33	BALCO 2	4.77	0.43%	Sikkim	0.11	0.01%
34	Jindal Power	4.68	0.42%	Arunachal Pradesh	0.07	0.01%
35	Ramagundam Stg-1	4.32	0.39%	Jindal Power	0.05	0.00%
36	AGBPP	4.03	0.36%	Meenakshi Energy	0.04	0.00%
37	GMR Kamalanga	3.93	0.35%	Tripura	0.02	0.00%
38	Assam	3.70	0.33%			
39	NLC TPS-II Expn	3.68	0.33%			
40	Gujarat	3.52	0.31%			
41	Rihand-II	3.27	0.29%			
42	Farakka	3.11	0.28%			

43	Barh Stg-2	2.91	0.26%			
44	DB Power	2.76	0.25%			
45	Mouda Stg-2	2.74	0.25%			
46	Simhadri Stg-2	2.74	0.24%			
47	Raipur Energen	2.72	0.24%			
48	Sikkim	2.72	0.24%			
49	Torrent Power	2.54	0.23%			
50	NTPC Sholapur	2.50	0.22%			
51	Haryana	2.46	0.22%			
52	NTPC Gadarwara	2.35	0.21%			
53	Khargone STPP	2.23	0.20%			
54	SKS Power	2.19	0.20%			
55	AGTPP	2.07	0.18%			
56	Neyveli New Thermal	2.05	0.18%			
57	Raigarh Energy Ltd.	2.04	0.18%			
58	J&K	1.80	0.16%			
59	Tamilnadu	1.36	0.12%			
60	Mouda Stg-1	1.33	0.12%			
61	BRBCL	1.28	0.11%			
62	Farakka Stg 3	1.09	0.10%			
63	Punjab	0.84	0.08%			
64	Spectrum Coal	0.84	0.08%			
65	RGPP_L_IR	0.83	0.07%			
66	Palatana	0.59	0.05%			
67	IL&FS	0.45	0.04%			
68	Ramagundam Stg-3	0.45	0.04%			
69	Simhadri Stg-1	0.40	0.04%			
70	Maruti Clean Coal Power	0.35	0.03%			
71	Singoli Bhagwati	0.34	0.03%			
72	Dadri GPP	0.30	0.03%			
73	RGPP_L	0.28	0.03%			
74	RGPP_L_Others	0.24	0.02%			
75	Karcham Wangtoo	0.24	0.02%			
76	Dikchu	0.22	0.02%			
77	Andhra Pradesh	0.19	0.02%			
78	Sasan UMPP	0.16	0.01%			
79	Coastal Gujrat Power	0.13	0.01%			
80	Dhariwal	0.09	0.01%			
81	Chandigarh	0.08	0.01%			
82	NSPCL Bhilai	0.07	0.01%			
83	Korba Stg 3	0.06	0.01%			
84	Jorethang	0.03	0.00%			
85	Anta	0.02	0.00%			
86	Auraiya	0.01	0.00%			
	Total Volume of top 10	724.12	64.74%	Total Volume of top 10	974.70	87.15%
	Total Volume in PXs	1,118.45		Total Volume in PXs	1,118.45	

Definitions/ Terminologies used in the Report

1. **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.

2. **Average MCP** is the average of daily MCP of the days during the month on which transaction happened.
3. **Bilateral Transaction** means a transaction for exchange of electrical energy (MWh) between a specified buyer and a specified seller, from a specified point of injection to a specified point of drawal for a fixed or varying quantum of power (MW) for any time block during a month.
4. **Daily MCP** is the average of MCP of all 96 Time Blocks of the day during which transaction happened.
5. **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.
6. **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.
7. **Energy Supplied** is the total energy (MU) available at the States' periphery.
8. **Final Scheduled Volume** is the total of scheduled volume of all 96 time blocks in a day during the month in which transaction happened.
9. **Green Term Ahead Market (GTAM)** is based on the principles of current Term Ahead Market (TAM) and will offer trade through Intra-Day Contracts, Day ahead contingency Contracts, Daily Contracts and Weekly Contracts for both solar and non-Solar Renewable Energy (RE) generation. GTAM is a market-based mechanism, where RE surplus and RE deficit States can trade RE Power and balance their RPO targets.

- 10. MCP** is the price discovered in each of the 15 Minute Time Block. The day is divided in 96-time blocks of 15 minutes each.
- 11. Real Time Market (RTM)** on the power exchanges is the market for electricity where market participants buy/ sell electricity on a half-hourly market and would commence with the end of the right to revision of schedule or declared capability and would end with gate closure. The auction sessions would be conducted every half an hour for the delivery of power for the duration of 30 minutes in two time blocks of 15 minutes each to commence from one hour after the closure of the RTM trading session.
- 12. 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.