



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

July 2020

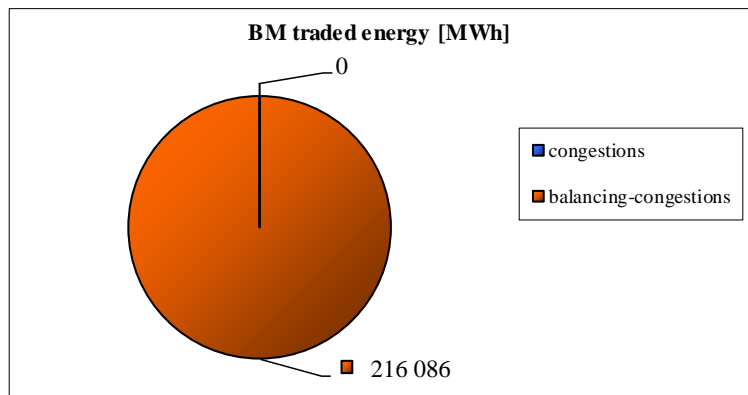
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching Center
C1 – The market share of the largest market participant
C3 – Total market share of top 3 market participants
NPS – Minimum number of residual generators
TTC – Total Transfer Capacity
NTC – Net Transfer Capacity
ATC – Available Transfer Capacity

According to the Commercial Code. Transelectrica. the Romanian Transmission System Operator. operates and monitors the activity of 3 types of markets: Balancing Market. Ancillary Services Market and Market for Allocation of Cross-Border Capacities.

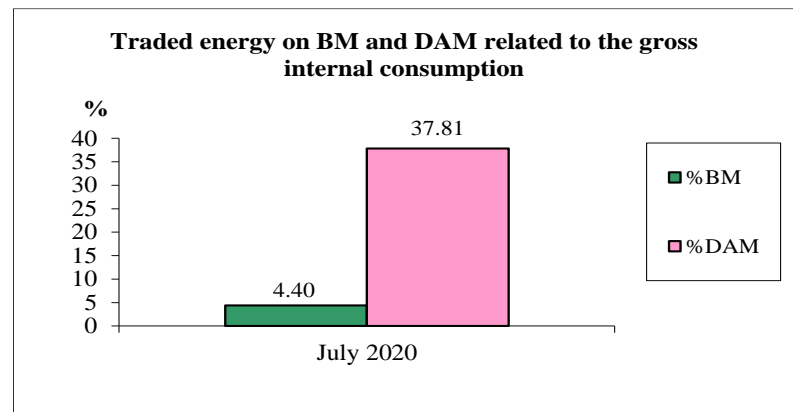
Using the records from the markets data bases. Transelectrica prepares daily. weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website www.transelectrica.ro (section Transparency).

The Balance Generation/Consumption

- The average monthly value of generated power was 6 261 MW and the actual internal gross consumption was 6 598 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.85%**. Bigger differences were registered in case of consumption values resulted as the sum between notified production and total scheduled exchanges with the neighbouring power systems. In this case the standard monthly deviation value was **2.76%**. The greatest daily deviation regarding the notifications was registered in **20.07 (5.98%)**.
- The energy used in July 2020 for balancing the power system and congestion management was 216 086 MWh (with an average power of 290 MW, which means **4.4%** from the internal gross consumption). No transactions were made for congestion management.
- The energy traded in July 2020 on Day Ahead Market was 1 855 892 MWh (with an average power of 2 494 MW, which means **37.81%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 45 565 343 lei (with an average weighted price of 210.87 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 45 565 343 lei (from which startup cost 0 lei);
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for congestion management was 0 lei.



July 2020

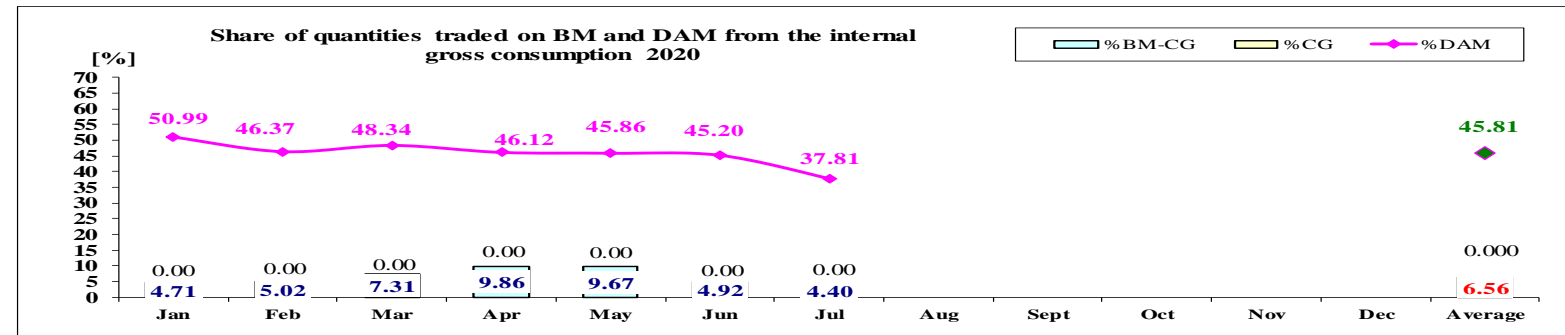




The Balance Generation / Consumption

Share of quantities traded on BM from the internal gross consumption 2019 - 2020

Month	2019 (%)	2020 (%)
Jan	5.20	4.71
Feb	4.95	5.02
Mar	7.10	7.31
Apr	5.87	9.86
May	5.95	9.67
Jun	5.30	4.92
Jul	4.90	4.40
Aug	4.70	-
Sept	5.43	-
Oct	4.73	-
Nov	4.95	-
Dec	5.39	-
average	5.37	6.56



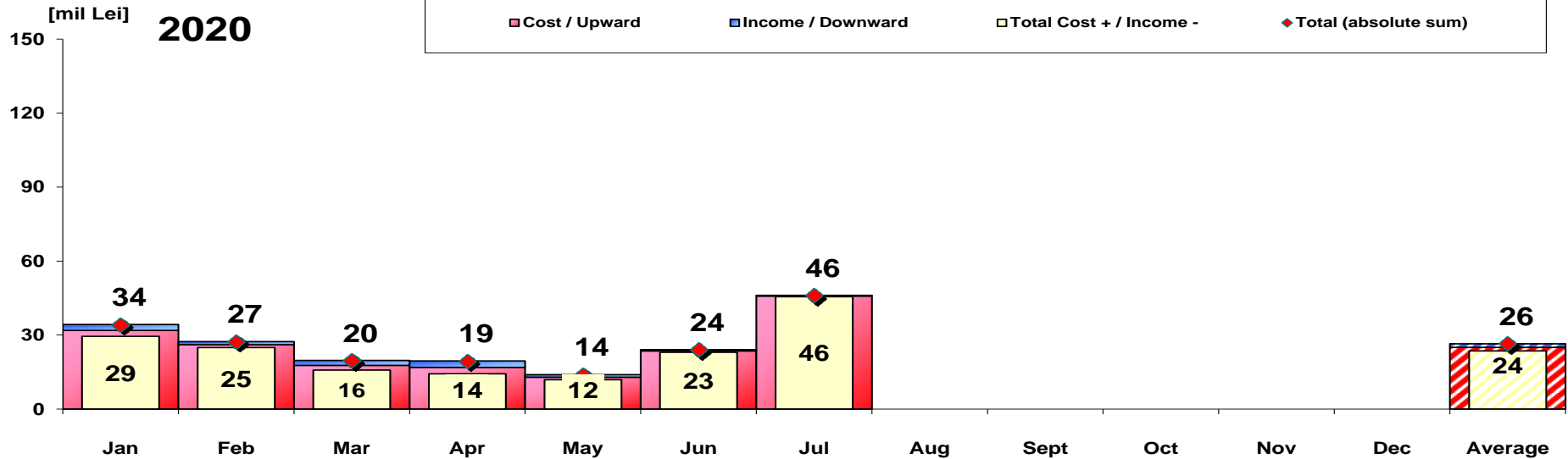
	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71	5.02	7.31	9.86	9.67	4.92	4.40						6.56
%DAM	50.99	46.37	48.34	46.12	45.86	45.20	37.81						45.81
%CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.000
%BM-CG	4.71	5.02	7.31	9.86	9.67	4.92	4.40						6.56



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Balancing Energy Market Transactions



[Lei]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average	Total
Cost / Upward	31 888 098	26 145 180	17 762 040	16 885 892	12 922 176	23 543 913	45 840 936						24 998 319	174 988 234
Income / Downward	2 431 458	1 215 818	1 941 606	2 607 194	1 041 810	489 075	275 593						1 428 936	10 002 554
CE Cost	0	0	0	0	0	0	0						0	0
Cost for energy traded on the Balancing Market (includes startup cost)	29 456 640	24 929 362	15 820 434	14 278 698	11 880 365	23 054 838	45 565 343						23 569 383	164 985 680
Cost+/Income- (BE and CE)	29 456 640	24 929 362	15 820 434	14 278 698	11 880 365	23 054 838	45 565 343						23 569 383	164 985 680
Total (absolute sum) (BE and CE)	34 319 556	27 360 998	19 703 646	19 493 085	13 963 986	24 032 988	46 116 528						26 427 255	184 990 788

CE – Congestion Energy

* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.

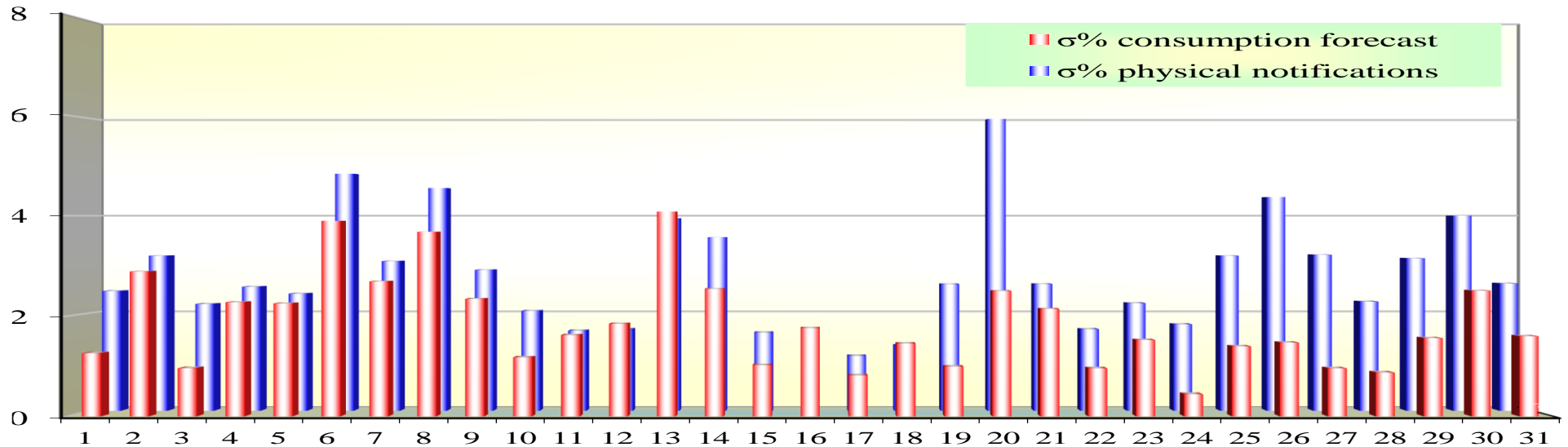


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Balancing Market

Standard deviation of physical notifications and consumption forecast against the actual consumption in July 2020



July 2020

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
σ% consumption forecast	1.26	2.89	0.96	2.28	2.25	3.90	2.69	3.68	2.34	1.17	1.62	1.85	4.08	2.54	1.02	1.76	0.81	1.45	0.99	2.50	2.14	0.96	1.52	0.44	1.40	1.47	0.96	0.87	1.56	2.51	1.60
σ% physical notifications	2.46	3.18	2.19	2.54	2.40	4.86	3.07	4.57	2.89	2.05	1.64	1.67	3.95	3.56	1.60	0.95	1.12	1.34	2.60	5.98	2.60	1.67	2.21	1.77	3.18	4.38	3.20	2.24	3.13	4.00	2.61

σ average % consumption forecast = 1.85

σ average % physical notifications = 2.76

$$\sigma \text{ average \% consumption forecast} = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (R - P)^2}}{R} \cdot 100$$

$$\sigma \text{ average \% notifications} = \frac{\sqrt{\frac{1}{n} \sum_{i=1}^n (R - N)^2}}{R} \cdot 100$$

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.



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Balancing Market

Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 67 BRPs, 109 market participants, holding 205 commercially operating dispatchable units. Starting with 01.07.2020, BMP INFINITE GAS DEVELOPMENT SRL changed its name to BMP ELECTROCENTRALE BORZESTI.

July 2020

Downward regulation

Downward regulation	Prices [lei/MWh]			Quantities [MWh]			Participants						
	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)	
Secondary	0.10	0.10	0.10	42692.08	42692.08	0.00%	3	40.82%	100.00%	40.82%	100.00%	3443	3443
Fast Tertiary	3.43	713.26	0.10	84192.50	80466.06	4.43%	8	40.86%	95.20%	41.05%	95.43%	3185	3202
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				126884.58	123158.14	2.94%							

Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)	
Secondary	633.67	747.00	498.00	28713.89	28713.89	0.00%	3	37.79%	100.00%	37.79%	100.00%	3423	3423
Fast Tertiary	428.41	740.75	5.00	66867.64	64213.92	3.97%	7	47.44%	89.09%	46.79%	89.44%	3603	3607
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				95581.52	92927.81	2.78%							



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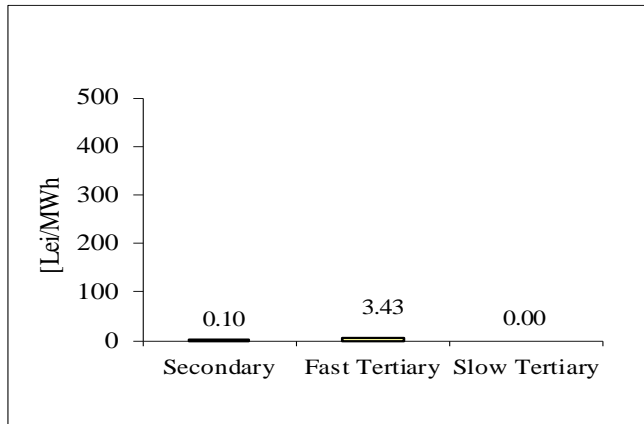
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Balancing Market

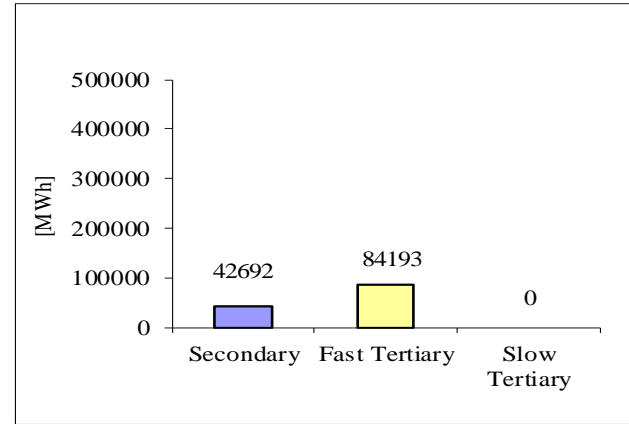
Balancing energy – Selected prices and quantities in July 2020

July 2020

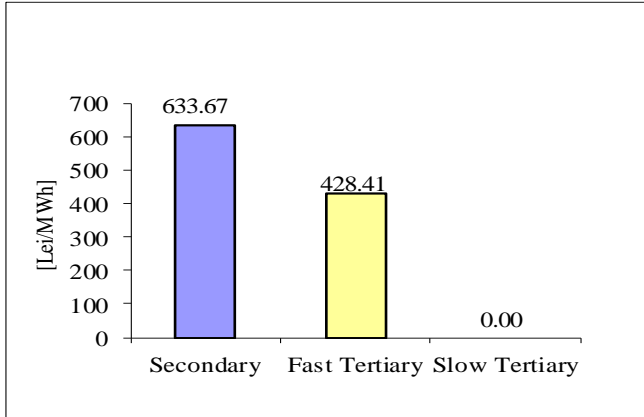
Downward regulation - average price [lei/MWh]



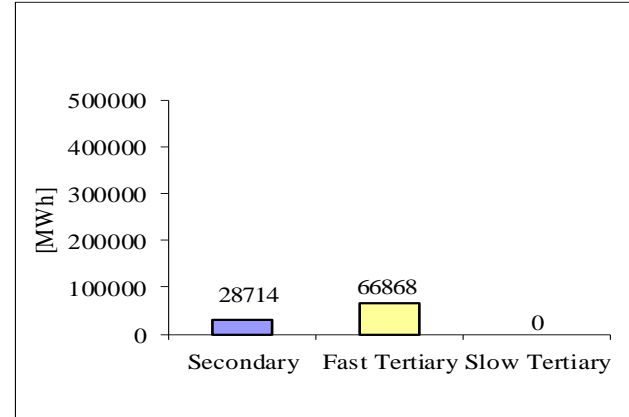
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



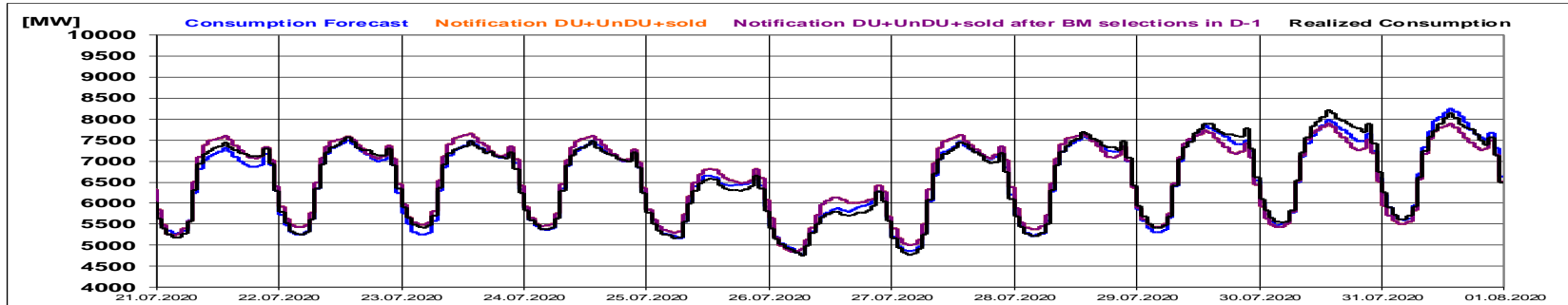
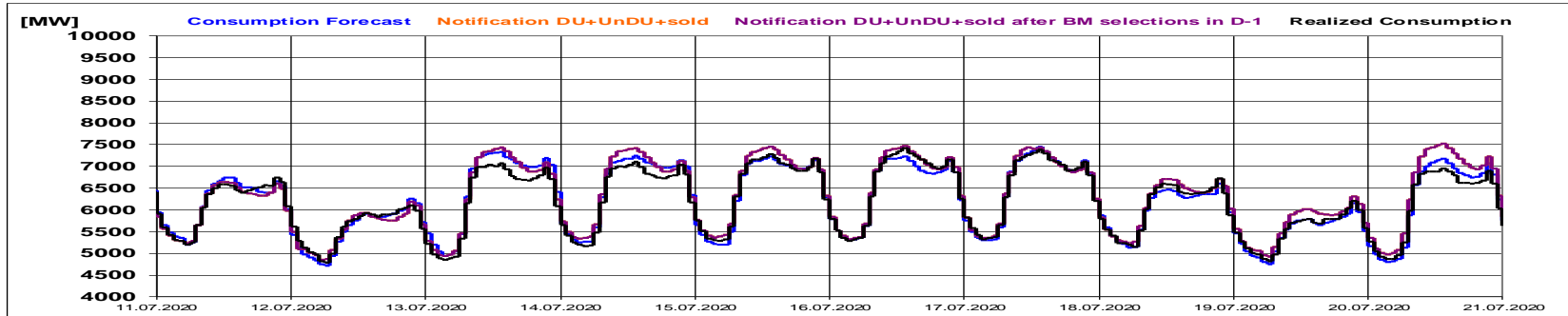
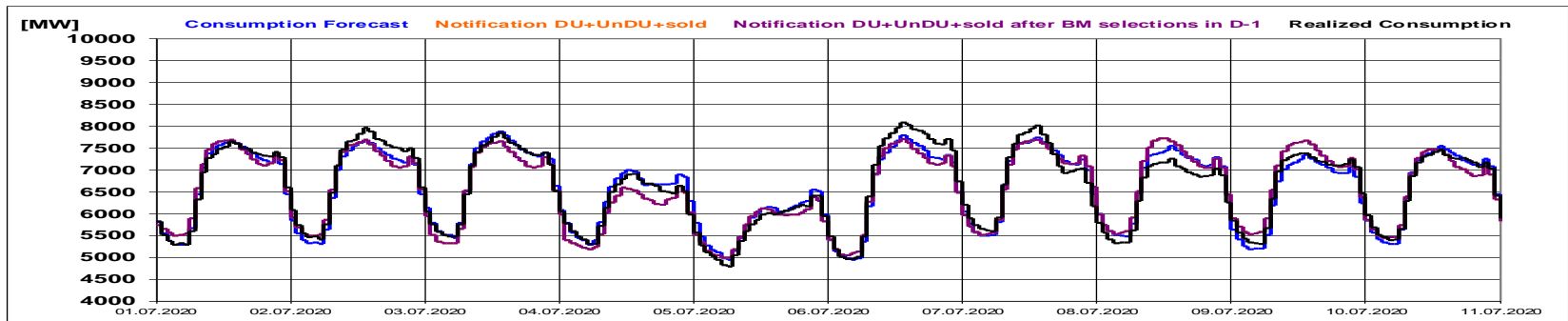


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Balancing Market

Realized consumption, forecast, notifications,
notifications after BM selections in D-1



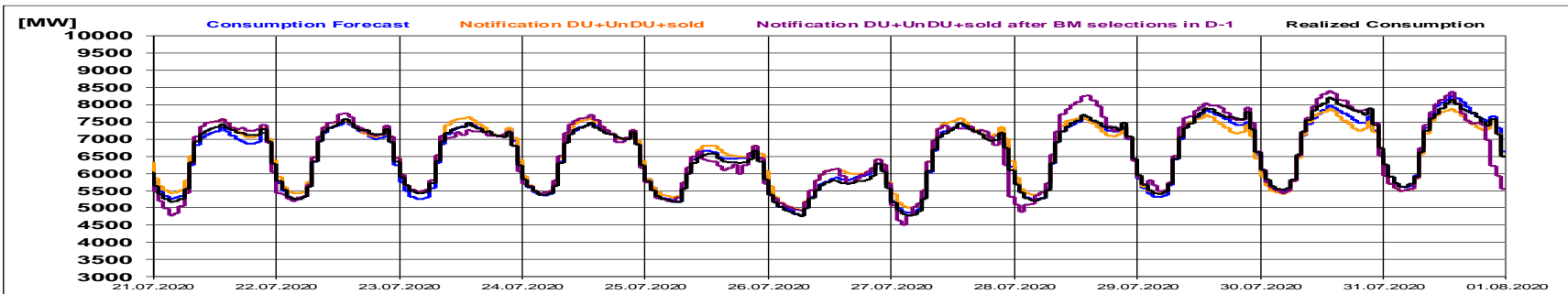
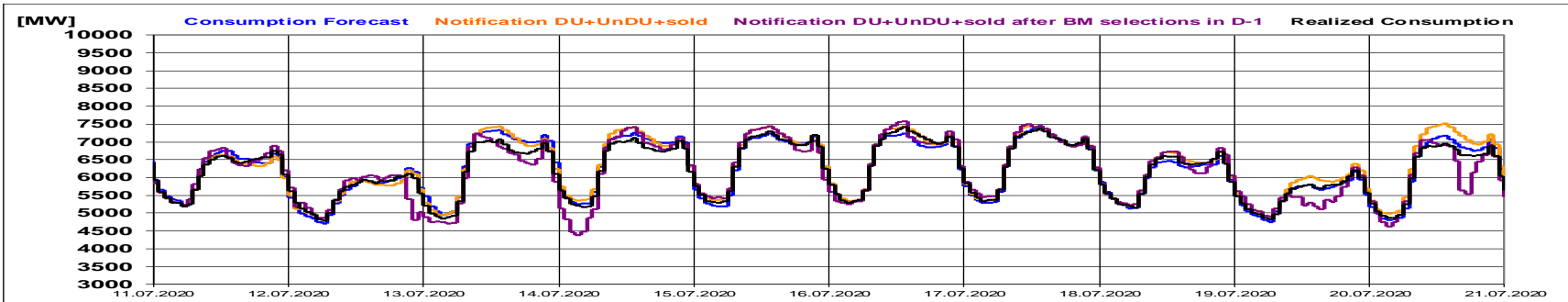
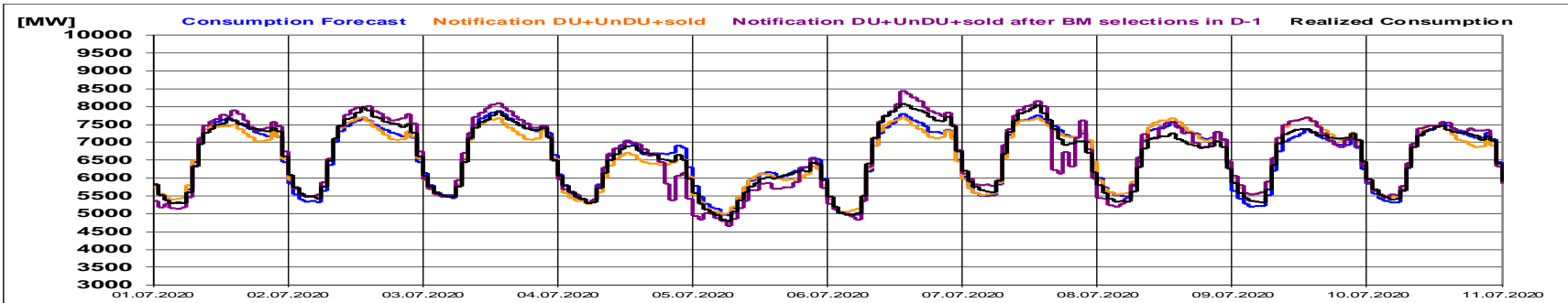


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Balancing Market

Realized consumption, forecast, notifications, notifications after BM selections in D (end of delivery day)





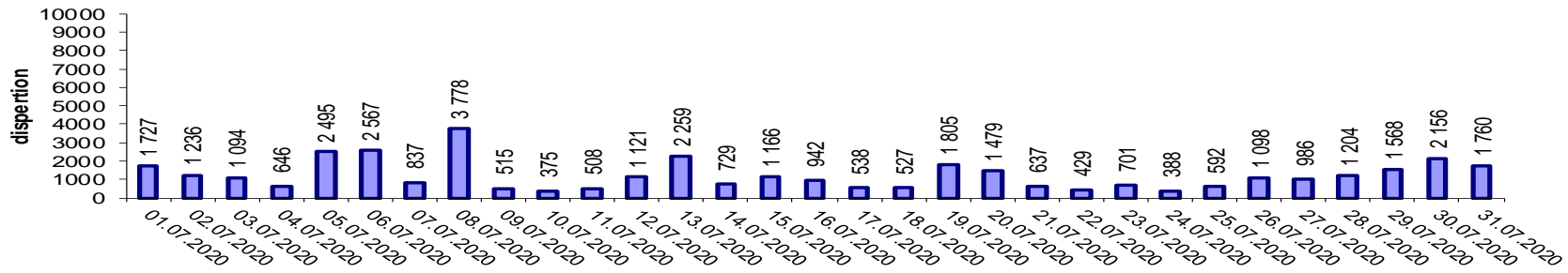
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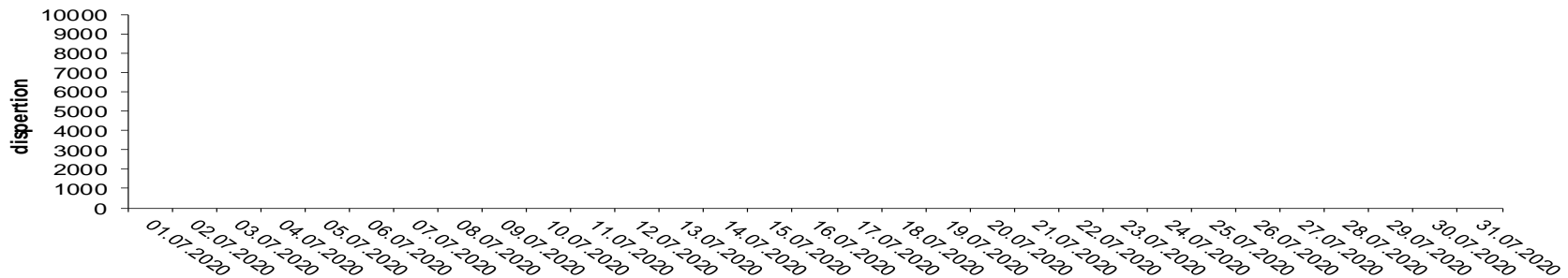
Balancing Market

Indicators – Price Volatility for Secondary Regulation

Price Volatility for Secondary Upward Regulation



Price Volatility for Secondary Downward Regulation



Price volatility for Secondary Downward Regulation, determined as the daily price dispersion, recorded zero values throughout the month, because of constant price values from one hour to the next.

Volatility = price dispersion on studied interval:

$$\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$



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