



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

November 2020

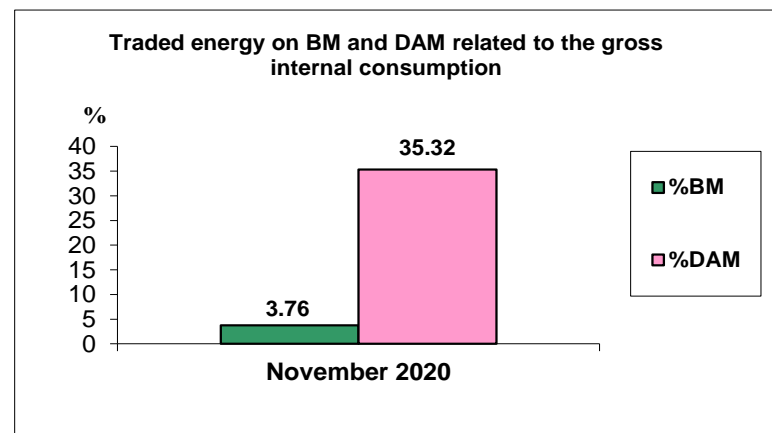
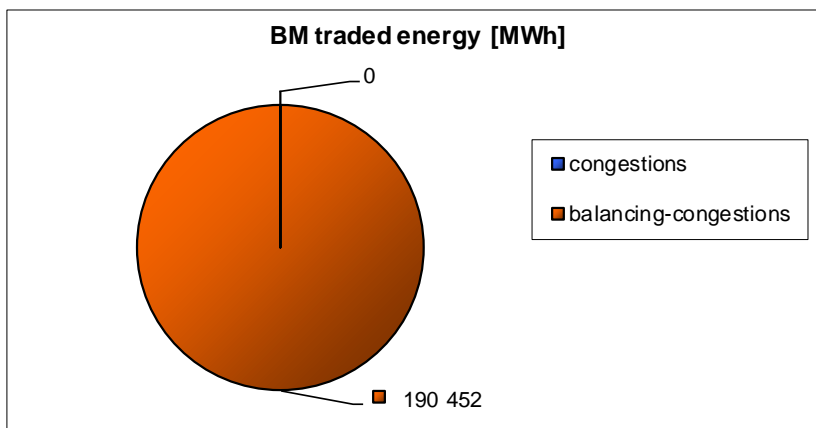
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
BMP - Balancing Market Participant
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching 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 6 960 MW and the actual internal gross consumption was 7 029 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 1.39%. 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 1.66%. The greatest daily deviation regarding the notifications was registered in 28th of Noveber (3.37%).
- The energy used in November 2020 for balancing the power system and congestion management was 190 452 MWh (with an average power of 265 MW, which means **3.76%** from the internal gross consumption). No transactions were made for congestion management.
- The energy traded in November 2020 on Day Ahead Market was 1 787 456 MWh (with an average power of 2 483 MW, which means **35.32%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 59 165 979 lei (with an average weighted price of 310,66 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 59 165 979 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.





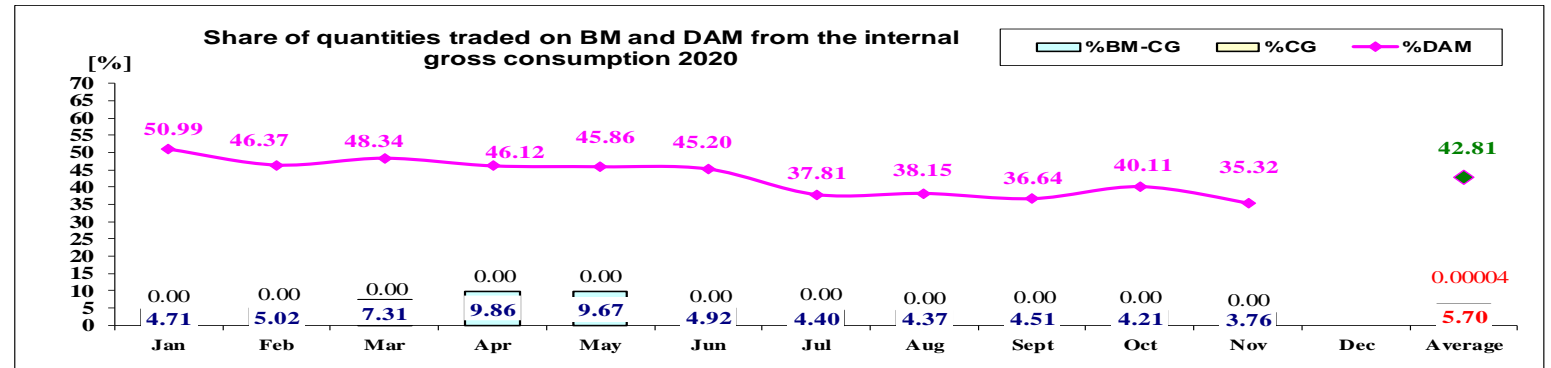
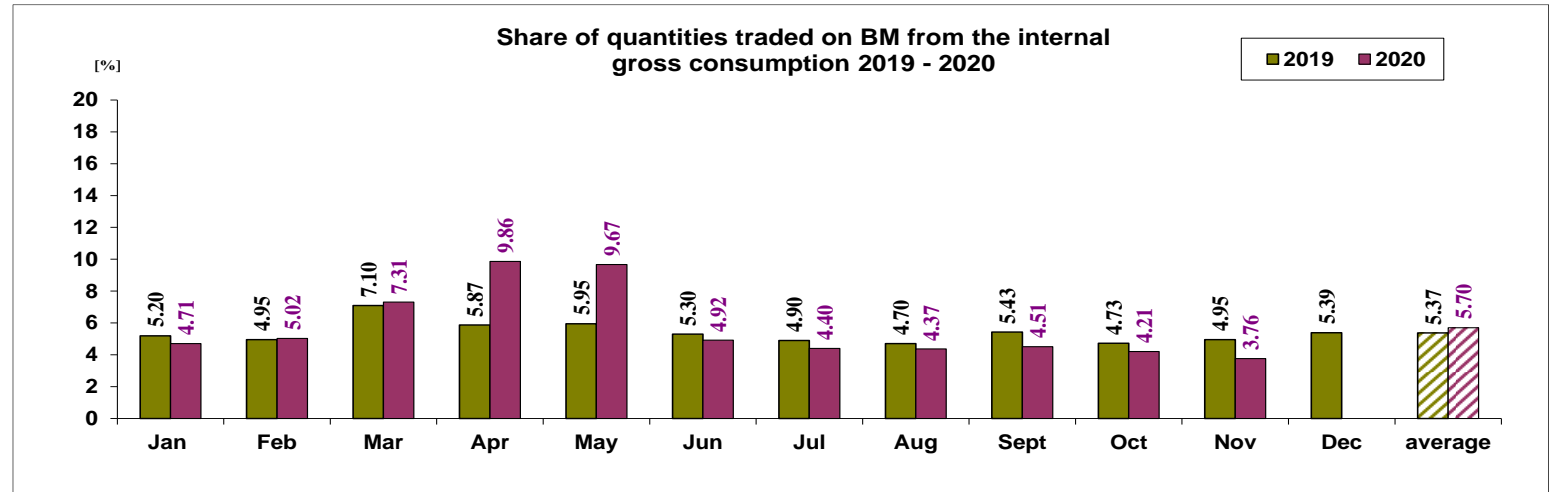
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Balancing Market

The Balance Generation / Consumption

• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption. The annual average value was calculated as average of monthly values.
(BM – Balancing Market, DAM – Day Ahead Market, BM-CG – difference between Balancing Market and traded volume on congestion).



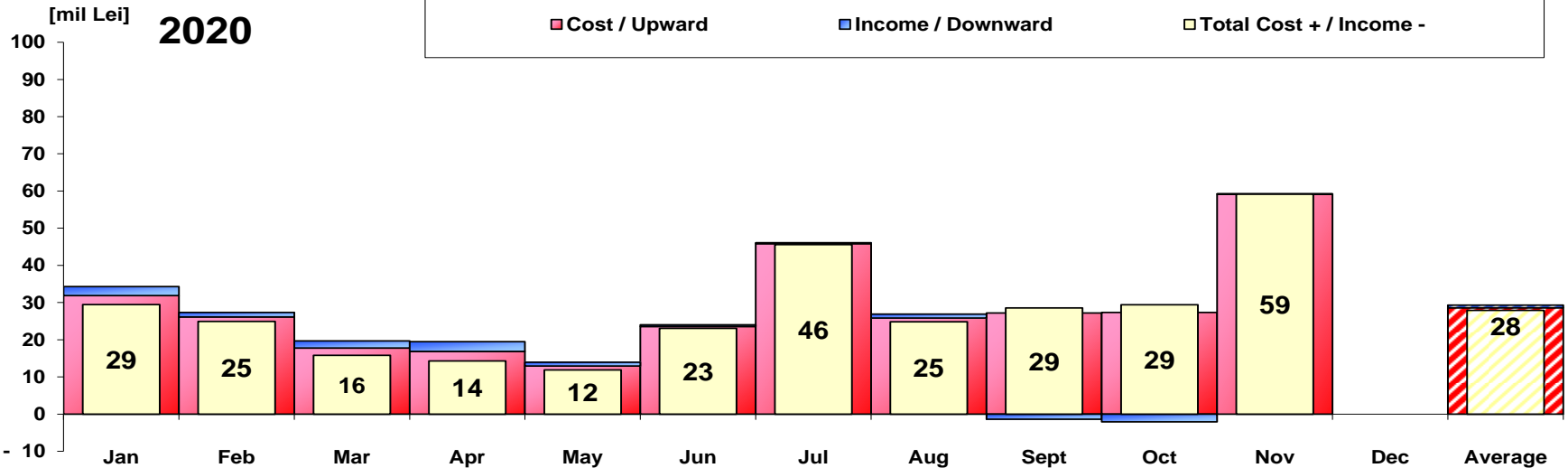
	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71	5.02	7.31	9.86	9.67	4.92	4.40	4.37	4.51	4.21	3.76		5.70
%DAM	50.99	46.37	48.34	46.12	45.86	45.20	37.81	38.15	36.64	40.11	35.32		42.81
%CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00004
%BM-CG	4.71	5.02	7.31	9.86	9.67	4.92	4.40	4.37	4.51	4.21	3.76		5.70



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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	25 852 709	27 215 587	27 361 341	59 192 582		28 600 950	314 610 453
Income / Downward	2 431 458	1 215 818	1 941 606	2 607 194	1 041 810	489 075	275 593	1 023 993	-1 350 525	-2 073 939	26 603		693 517	7 628 687
CE Cost	0	0	0	0	0	0	0	0	1 650	0	0		150	1 650
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	24 828 716	28 564 461	29 435 279	59 165 979		27 907 283	306 980 116
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	24 828 716	28 566 112	29 435 279	59 165 979		27 907 433	306 981 766

CE – Congestion Energy

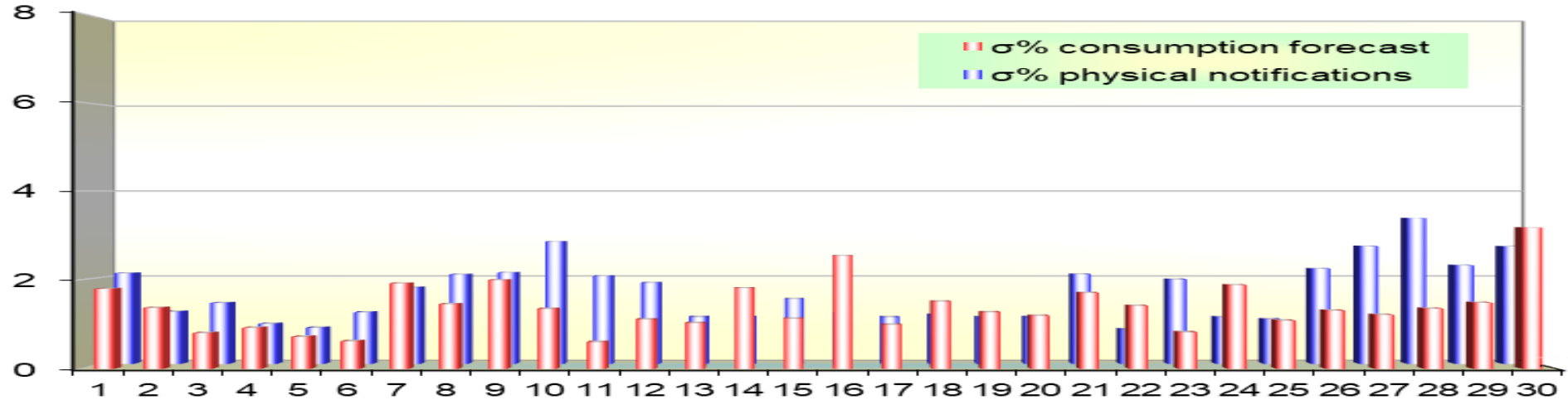
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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Balancing Market

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



nov 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
σ% consumption forecast	1.80	1.37	0.80	0.92	0.72	0.62	1.92	1.46	2.00	1.35	0.60	1.11	1.03	1.82	1.13	2.54	0.99	1.51	1.27	1.19	1.71	1.42	0.82	1.89	1.08	1.31	1.21	1.35	1.49	3.18
σ% physical notifications	2.10	1.21	1.41	0.93	0.84	1.19	1.77	2.07	2.11	2.83	2.03	1.88	1.08	1.08	1.50	1.18	1.08	1.13	1.08	1.09	2.07	0.80	1.95	1.08	1.03	2.20	2.72	3.37	2.28	2.72

σ_{average% consumption forecast} = 1.39

σ_{average % physical notifications} = 1.66

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

Balancing Market

Balancing energy – Selected prices and quantities

- At the beginning of the month, there were 66 PRE and 100 market participants operating on PE, holding 197 dispatchable units in commercial operation. Starting with 1st of November 2020, BMP TERMOFICARE ORADEA S.A. (30XROTERMORAD--P) and DU ORAD1 were removed from BMP list and DU list.

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)		
Secondary	-10.88	0.10	-30.00	42114.21	42114.21	0.00%	4	44.65%	95.79%	44.65%	95.79%	3324	3324
Fast Tertiary	7.42	55.00	-30.00	67118.33	65229.62	2.81%	15	49.11%	94.39%	49.82%	94.69%	3488	3536
Slow Tertiary	0.60	0.60	0.60	60.00	58.84	1.93%	1	100.00%	100.00%	100.00%	100.00%	10000	10000
				109292.53	107402.67	1.73%							

Upward regulation

	Monthly average	Maximum	Minimum	Total selected	Actually delivered	Deviation %							
							C1 Number	C3 (selected)	C1 (actually delivered)	C3 (actually delivered)	HHI (selected)	HHI (actually delivered)	
Secondary	755.05	1050.00	560.00	32182.80	32182.80	0.00%	4	45.09%	95.52%	45.09%	95.52%	3329	3329
Fast Tertiary	686.21	1035.19	0.10	52493.89	50866.29	3.10%	10	43.78%	81.43%	44.47%	81.56%	2918	2937
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				84676.69	83049.10	1.92%							



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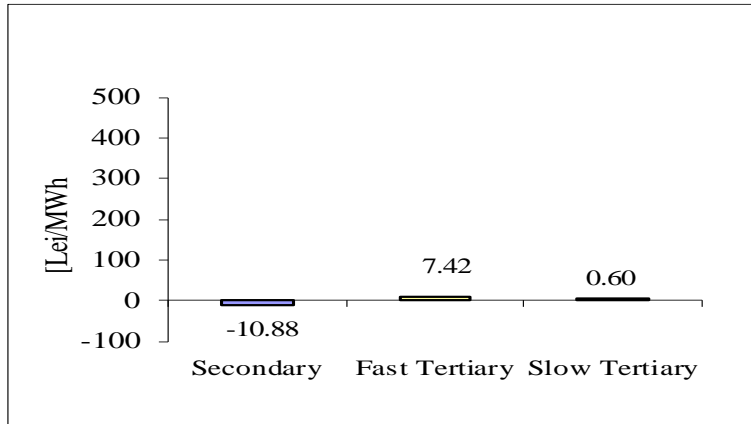
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Balancing Market

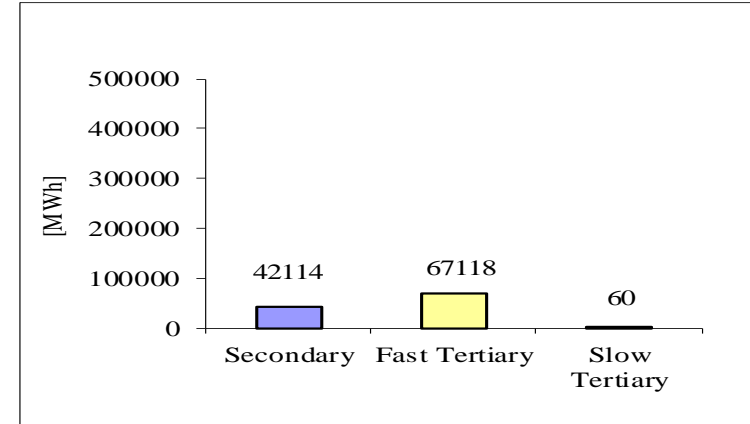
Balancing energy – Selected prices and quantities in November 2020

November 2020

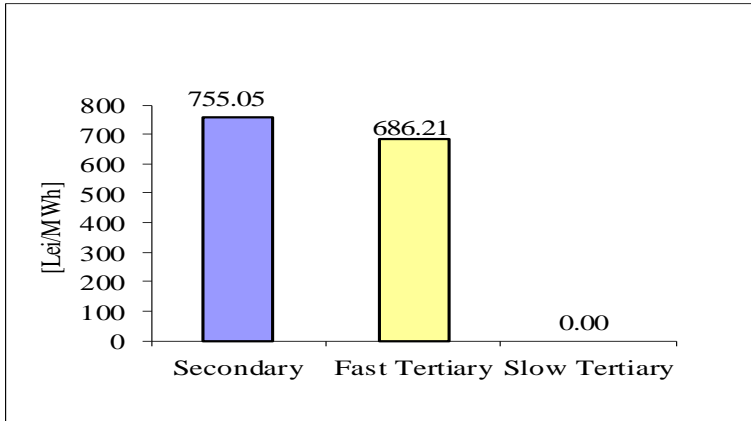
Downward regulation - average price [lei/MWh]



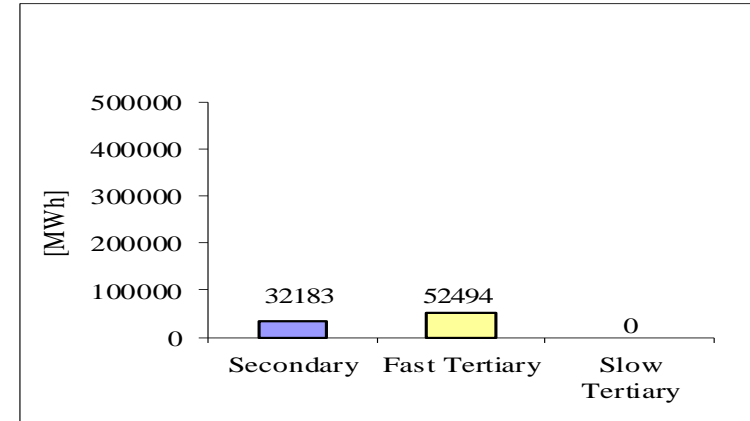
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



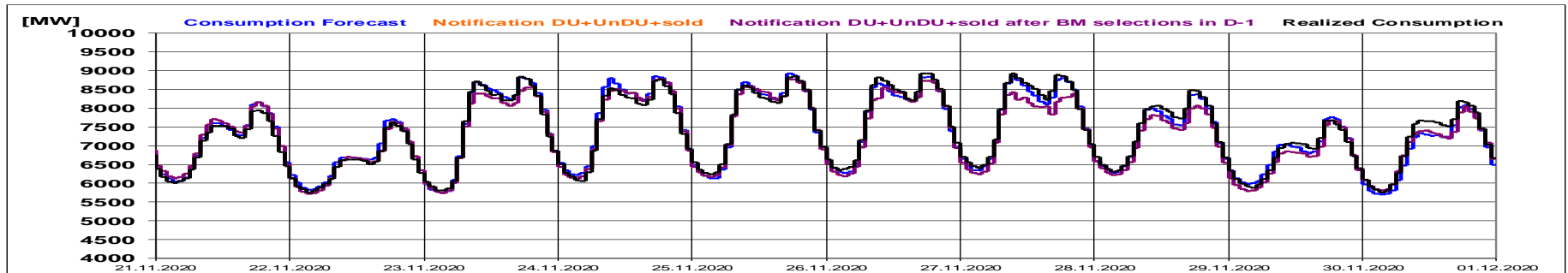
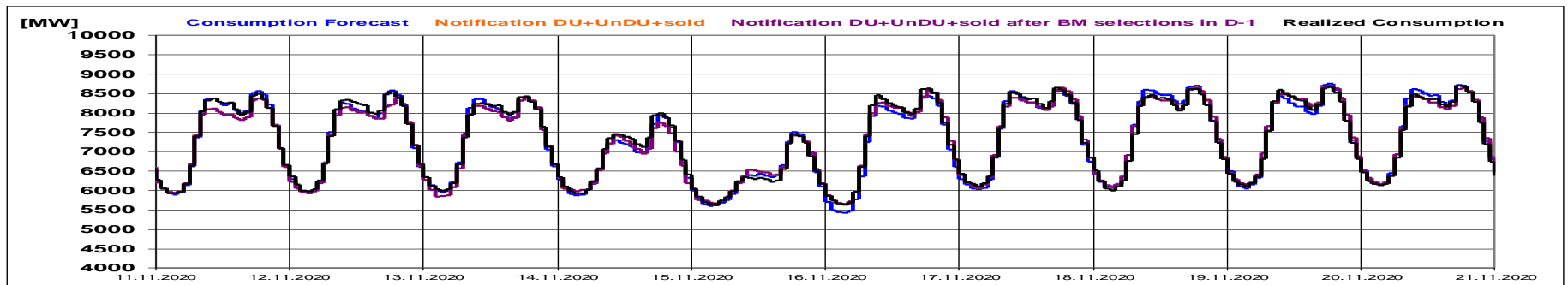
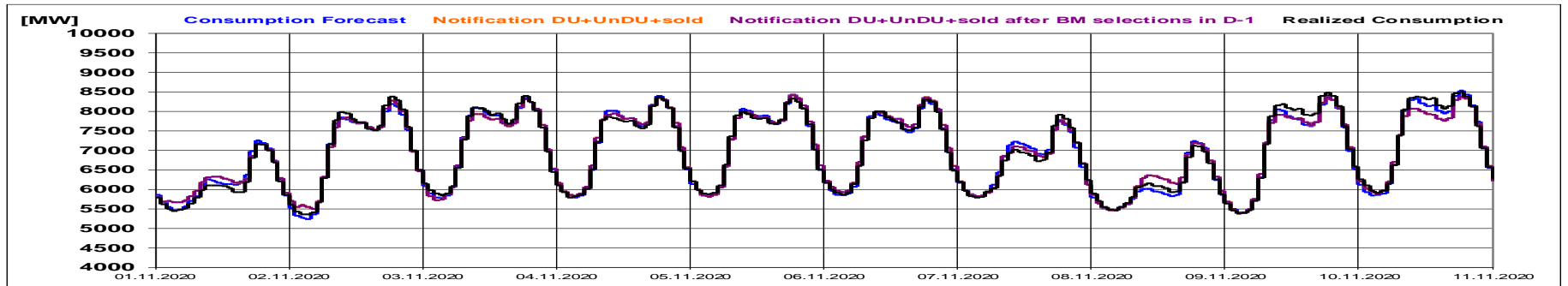


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Realized consumption, forecast, notifications,
notifications after BM selections in D-1



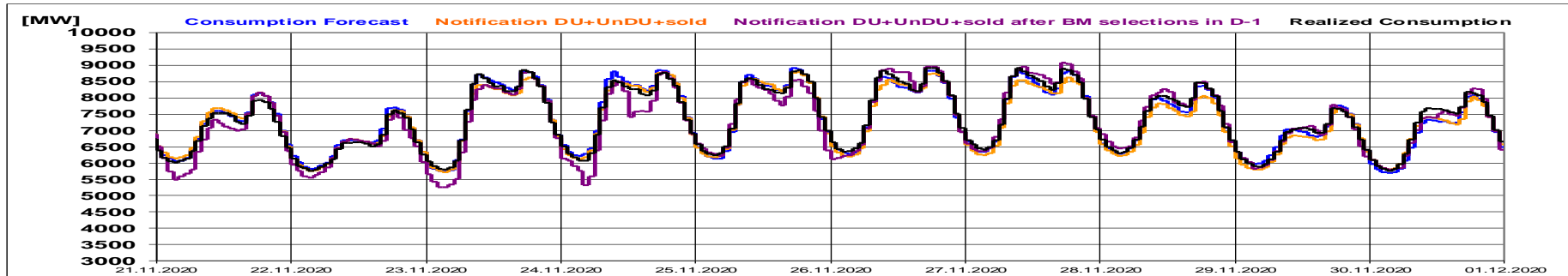
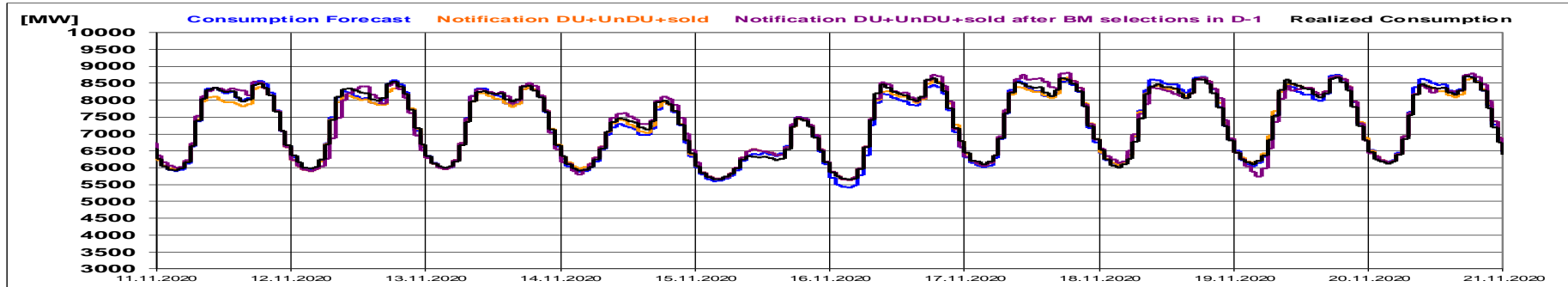
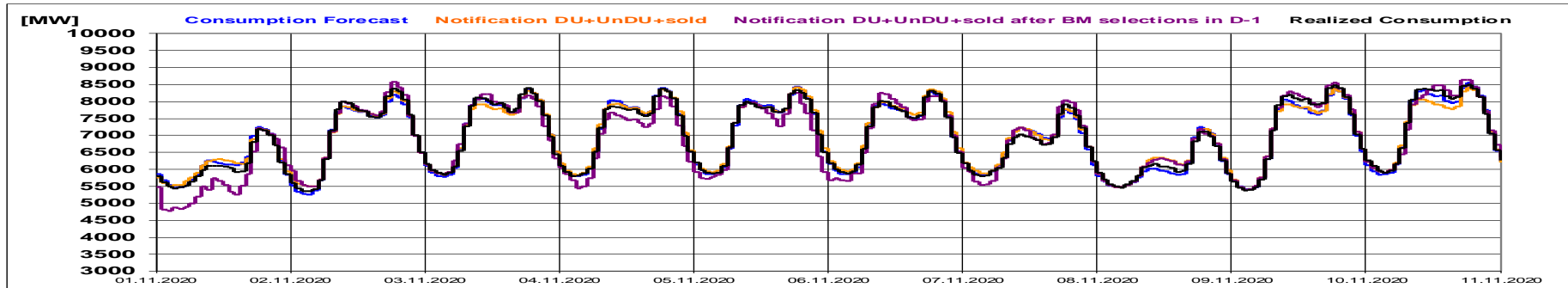


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Balancing Market

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



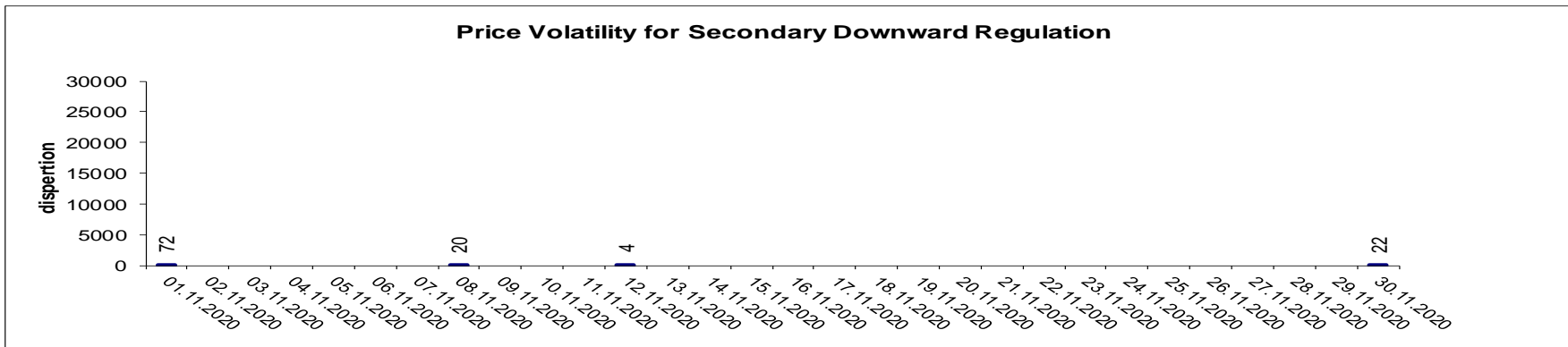
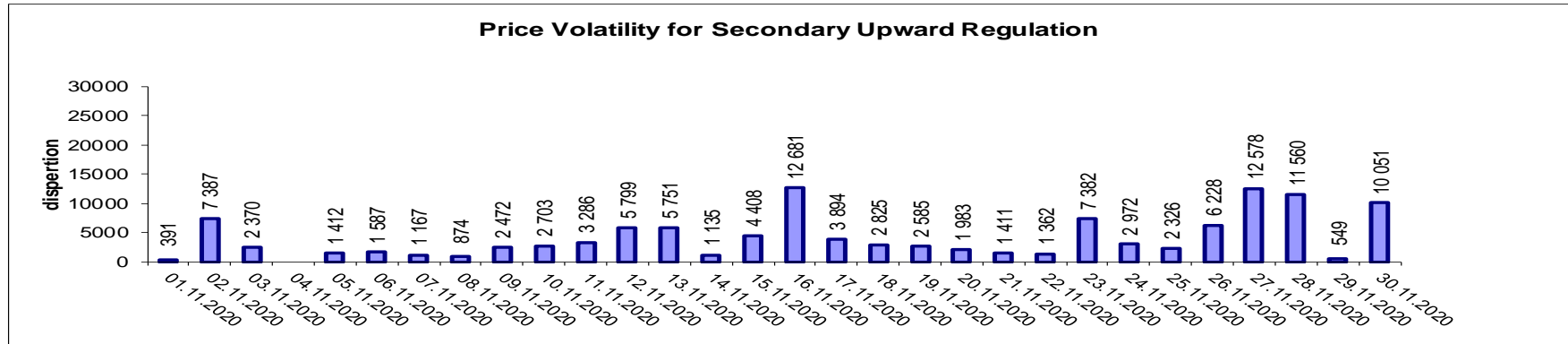


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Balancing Market

Indicators – Price Volatility for Secondary Regulation



Price volatility for Secondary 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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