



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

April 2020

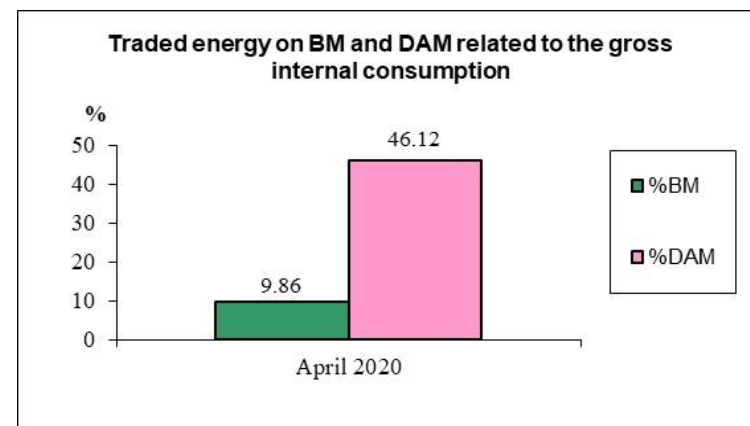
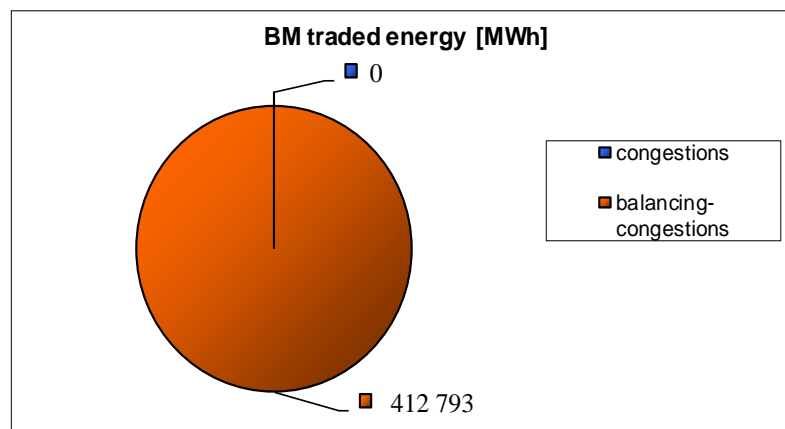
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching Center
C1 – The market share of the 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 5 664 MW and the actual internal gross consumption was 5 813 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **2.55%**. 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 **8.53%**. The greatest daily deviation regarding the notifications was registered in **05.04 (15.49%)**.
- The energy used in April 2020 for balancing the power system and congestion management was 412 793 MWh (with an average power of 573 MW, which means **9.86%** from the internal gross consumption). No transactions were made for congestion management.
- The energy traded in April 2020 on Day Ahead Market was 1 930 314 MWh (with an average power 2 681 MW, which means **46.12%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 14 278 698 lei (with an average weighted price of 34,59 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 14 278 698 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.



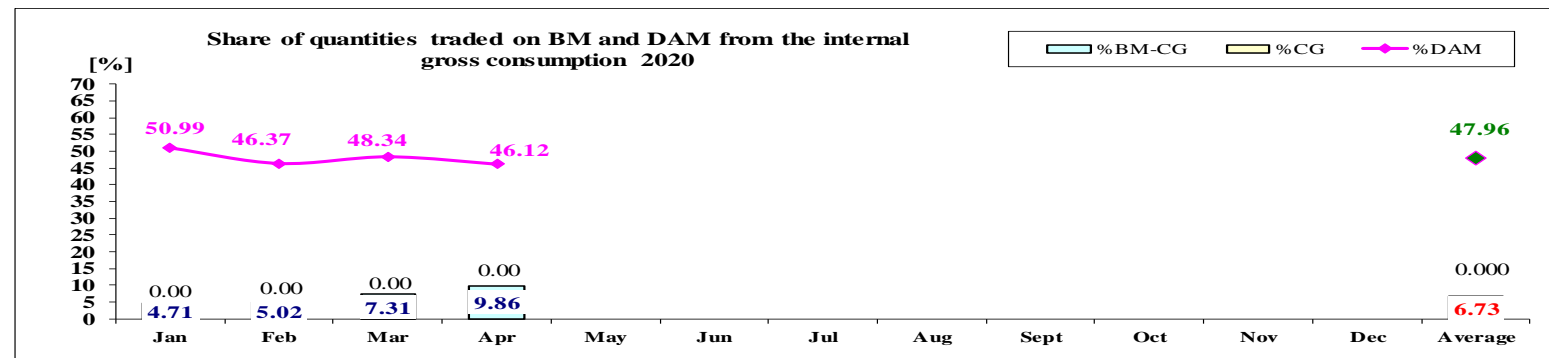
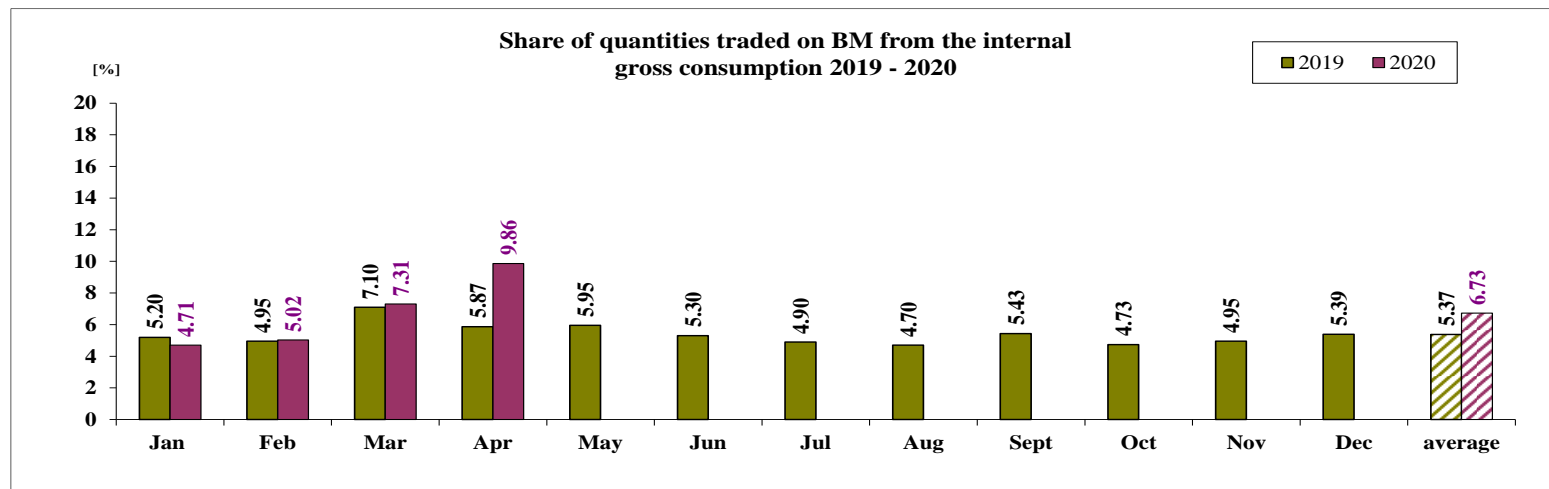


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Balancing Market

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).



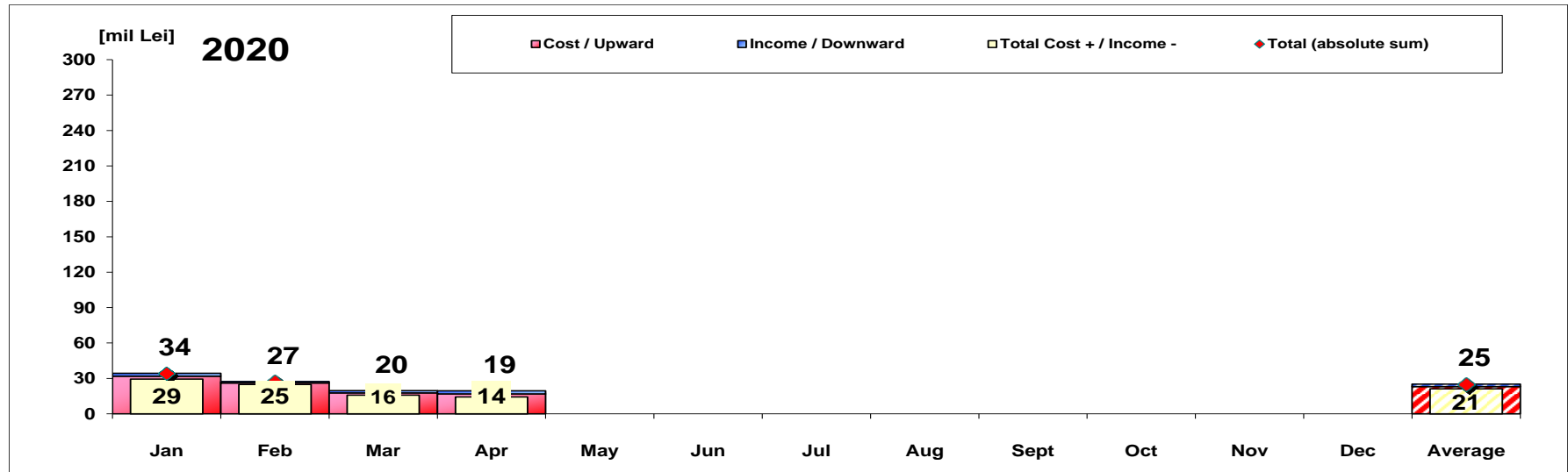
	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71	5.02	7.31	9.86									6.73
%DAM	50.99	46.37	48.34	46.12									47.96
%CG	0.00	0.00	0.00	0.00									0.00
%BM-CG	4.71	5.02	7.31	9.86									6.73



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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									23 170 302	92 681 210
Income / Downward	2 431 458	1 215 818	1 941 606	2 607 194									2 049 019	8 196 076
CE Cost	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									21 121 283	84 485 134
Cost+/Income- (BE and CE)	29 456 640	24 929 362	15 820 434	14 278 698									21 121 283	84 485 134
Total (absolute sum) (BE and CE)	34 319 556	27 360 998	19 703 646	19 493 085									25 219 321	100 877 286

CE – Congestion Energy

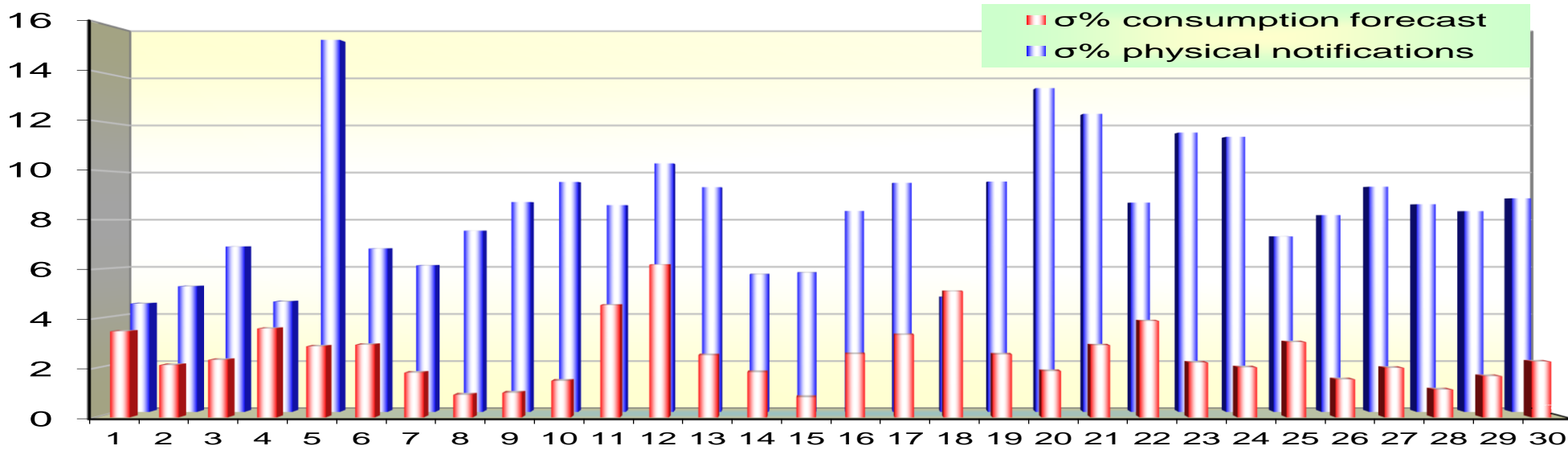
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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Balancing Market

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



apr 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	3.48	2.12	2.33	3.60	2.88	2.94	1.81	0.91	1.00	1.48	4.55	6.18	2.52	1.83	0.82	2.57	3.34	5.10	2.55	1.87	2.92	3.90	2.22	2.03	3.05	1.54	2.01	1.13	1.67	2.26
σ% physical notifications	4.51	5.23	6.88	4.59	15.49	6.80	6.10	7.54	8.74	9.57	8.61	10.34	9.35	5.73	5.80	8.36	9.54	4.77	9.59	13.48	12.41	8.71	11.63	11.45	7.30	8.19	9.38	8.64	8.36	8.89

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

σ_{average % consumption forecast} = 2.55

σ_{average % physical notifications} = 8.53

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

Public

Balancing Market

Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 69 BRPs, 110 market participants, holding 204 commercially operating dispatchable units. Starting with 22nd of April 2020, production unit STEJ6 was registered in the BM as a dispatchable unit after the trial period, having as BRP HIDROELECTRICA S.A. (30XROHIDRO ----- 1). In accordance with the provisions of art. 2 of ANRE Order no. 59/2015, "For the approval of the Rules regarding the takeover of the electricity delivered in the electrical networks, produced during the trial period of the production capacities", temporary BRP HIDROELECTRICA S.A. (30XROHIDROPROV-R) was removed from the BRP list.

April 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	50557.48	50557.48	0.00%	4	79.71%	100.00%	79.71%	100.00%	6590	6590
Fast Tertiary	5.99	723.96	0.10	277640.66	273441.61	1.51%	8	64.08%	92.05%	64.26%	92.20%	4546	4569
Slow Tertiary	16.74	720.00	0.10	57675.93	57480.20	0.34%	3	91.14%	100.00%	91.15%	100.00%	8346	8347
				385874.07	381479.30	1.14%							

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	582.83	851.98	450.01	23428.54	23428.54	0.00%	4	79.70%	99.99%	79.70%	99.99%	6586	6586
Fast Tertiary	415.02	634.17	10.00	8175.79	7805.21	4.53%	8	51.10%	89.63%	51.84%	91.23%	3591	3707
Slow Tertiary	0.80	10.00	0.10	86.06	79.78	7.30%	2	71.56%	100.00%	69.92%	100.00%	5929	5793
				31690.39	31313.54	1.19%							



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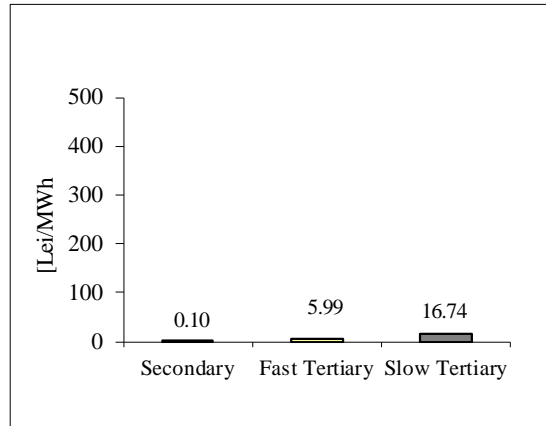
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Balancing Market

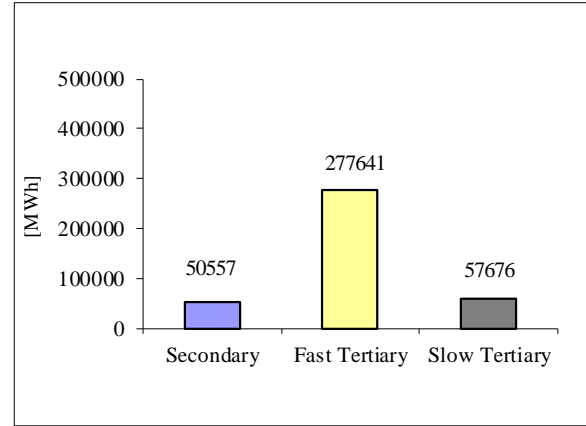
Balancing energy – Selected prices and quantities in April 2020

April 2020

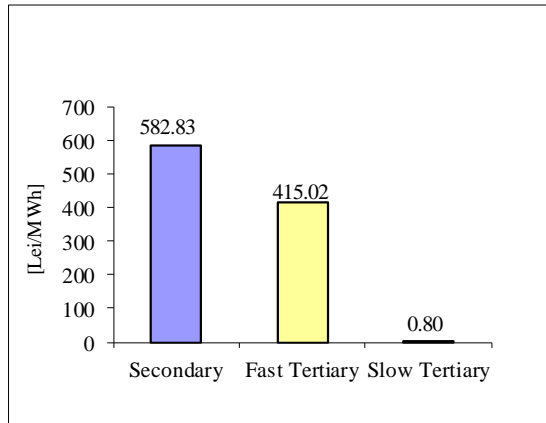
Downward regulation - average price [lei/MWh]



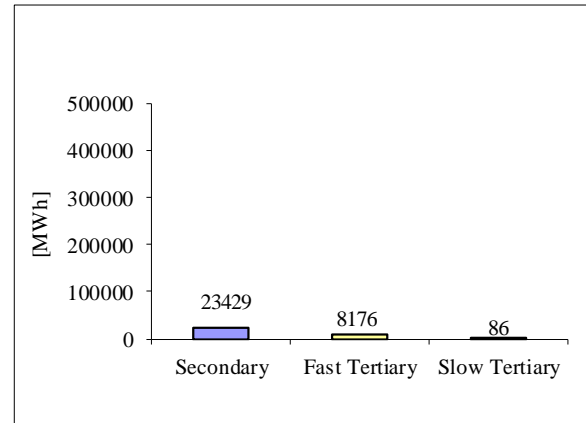
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



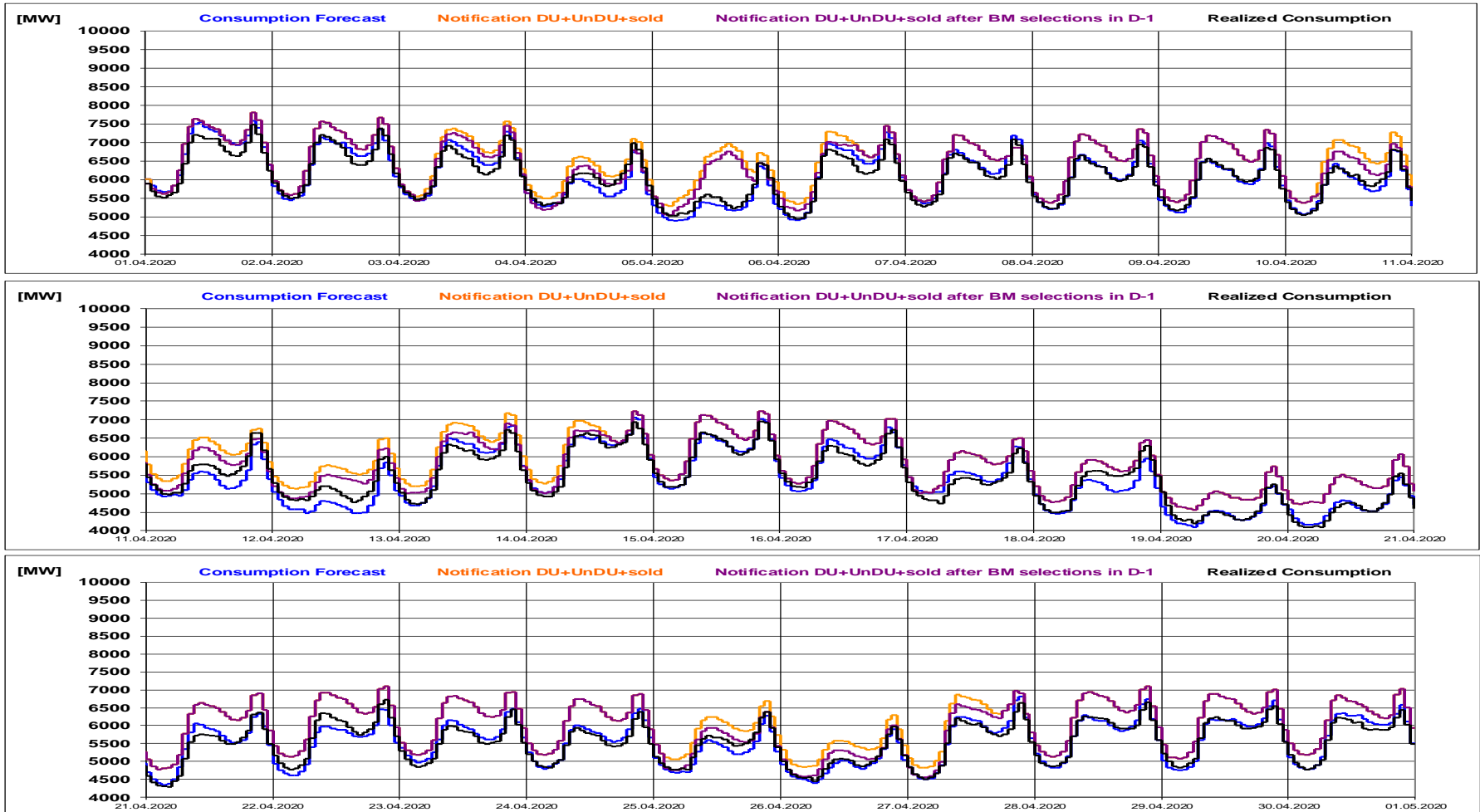


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Balancing Market

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



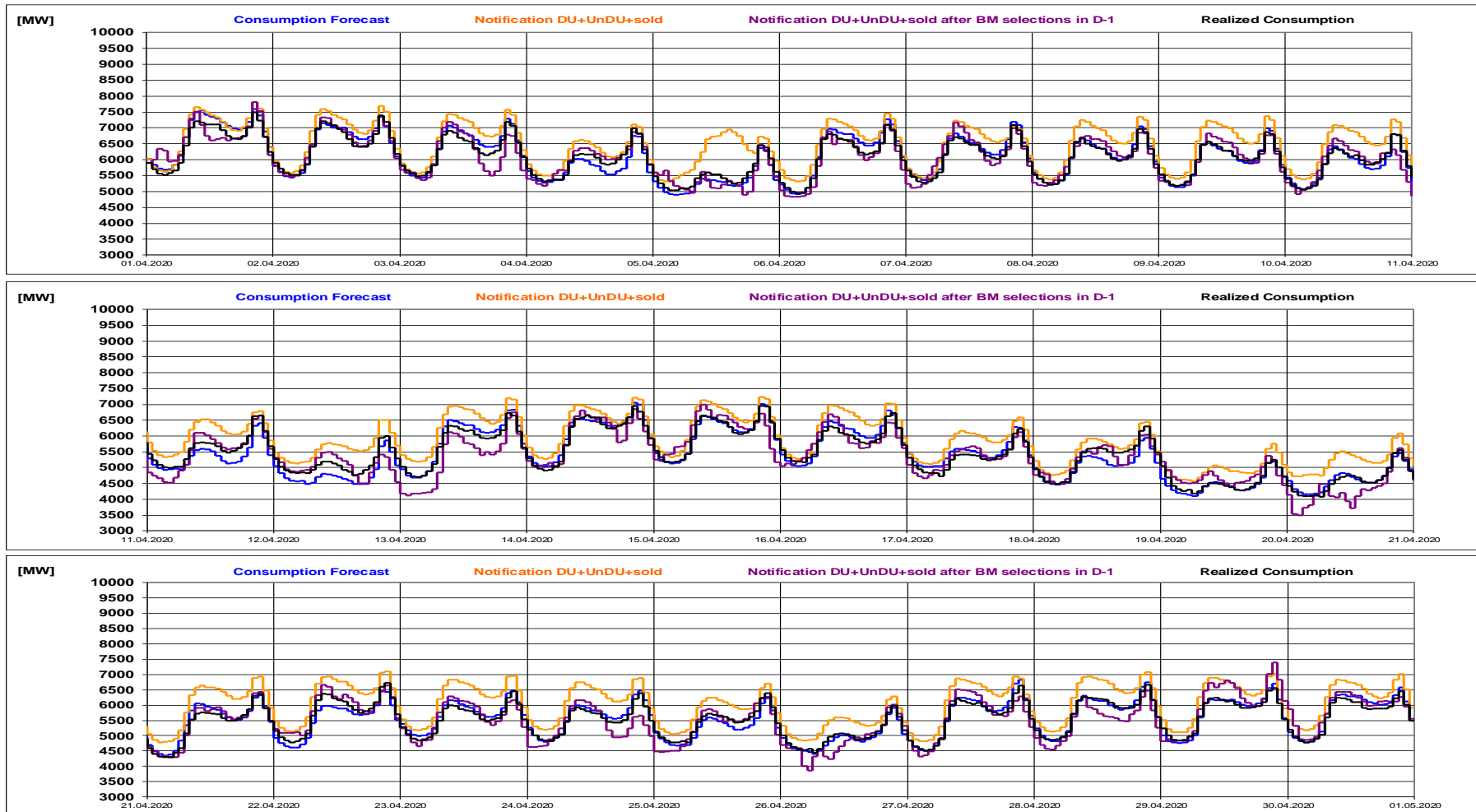


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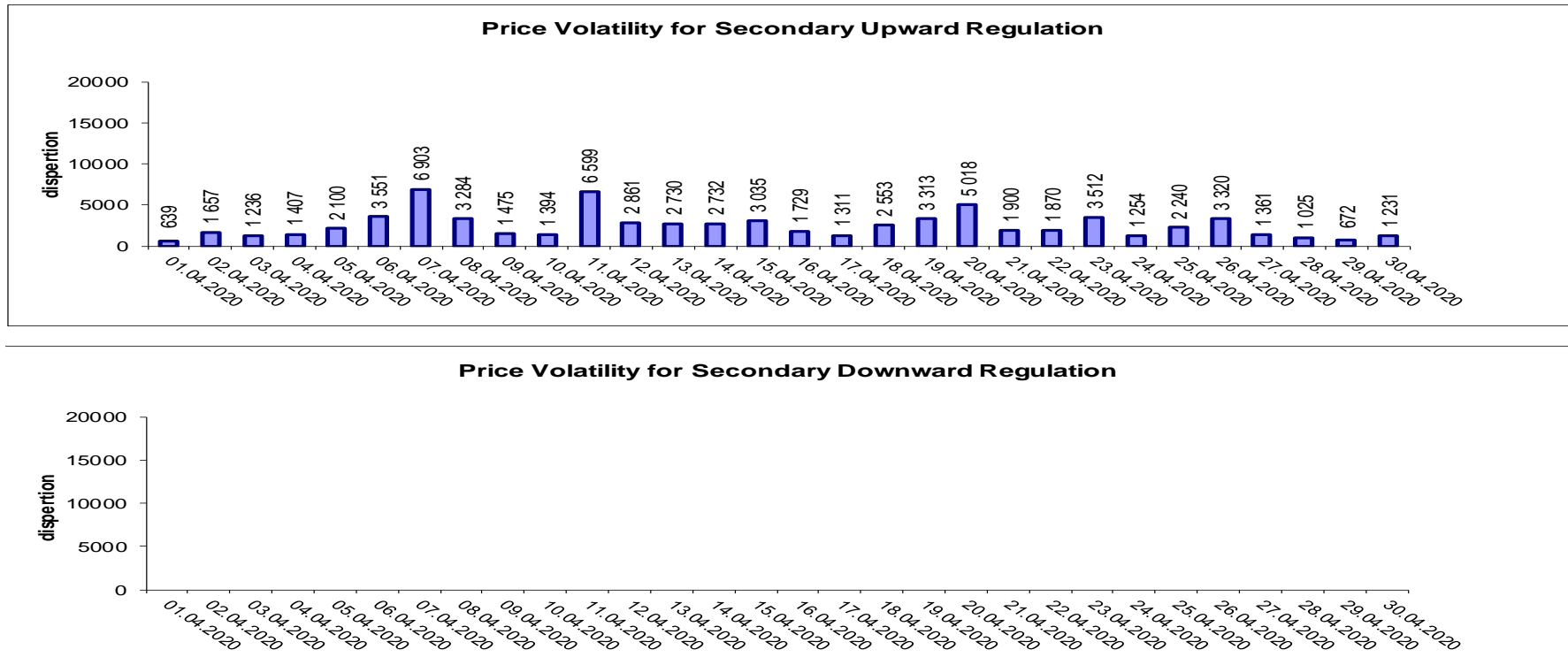
Balancing Market

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



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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