

# MARKET MONITORING REPORT

## Balancing Market

May 2018

## Abbrevations

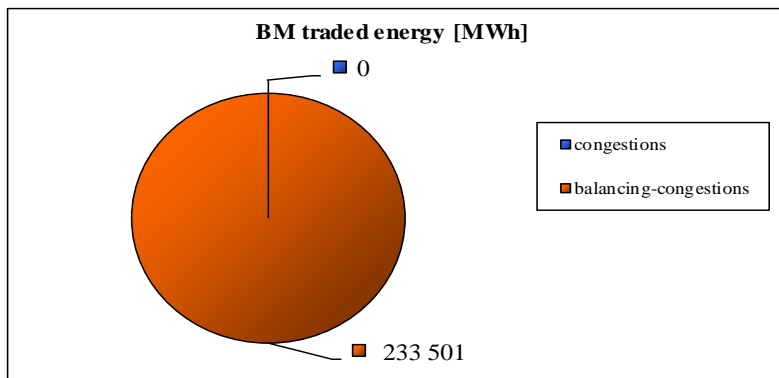
ANRE - Romanian Energy Regulatory Authority  
HHI - Herfindahl-Hirschman Index  
BRP - Balance Responsible Party  
BM - Balancing Market  
DAM - Day Ahead Market  
TSO - Transmission System Operator  
DU – Dispatchable Unit  
PN – Physical Notification  
NDC - National Dispatching Center  
C1 – The market 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.

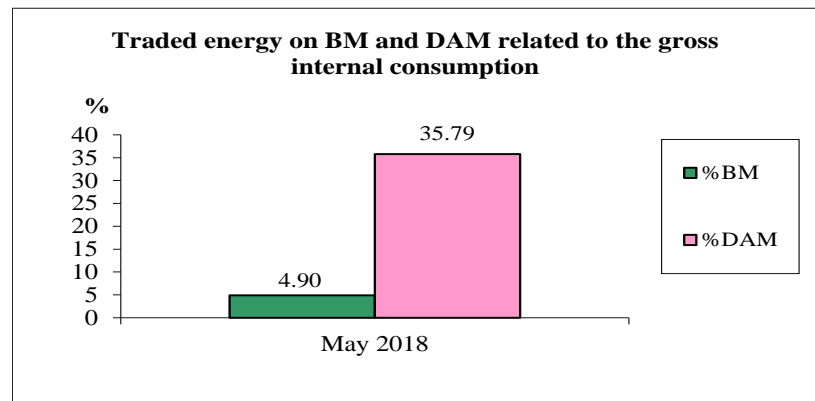
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website **[www.transelectrica.ro](http://www.transelectrica.ro)** (section Transparency).

## The Balance Generation/Consumption

- The average monthly value of generated power was 6 382 MW and the actual internal gross consumption was 6 409 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.35%**. 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 **3.76%**. The greatest daily deviation regarding the notifications was registered in **01.05 (9.97%)**.
- The energy used in May 2018 for balancing the power system and congestion management was 233 501MWh (with an average power of 314 MW, which means 4.90% from the internal gross consumption).
- The energy traded in May 2018 on Day Ahead Market was 1 706 597 MWh (with an average power of 2 294 MW, which means **35.79 %** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was **31 217 756 lei** (with an average weighted price of 134 lei/MWh).

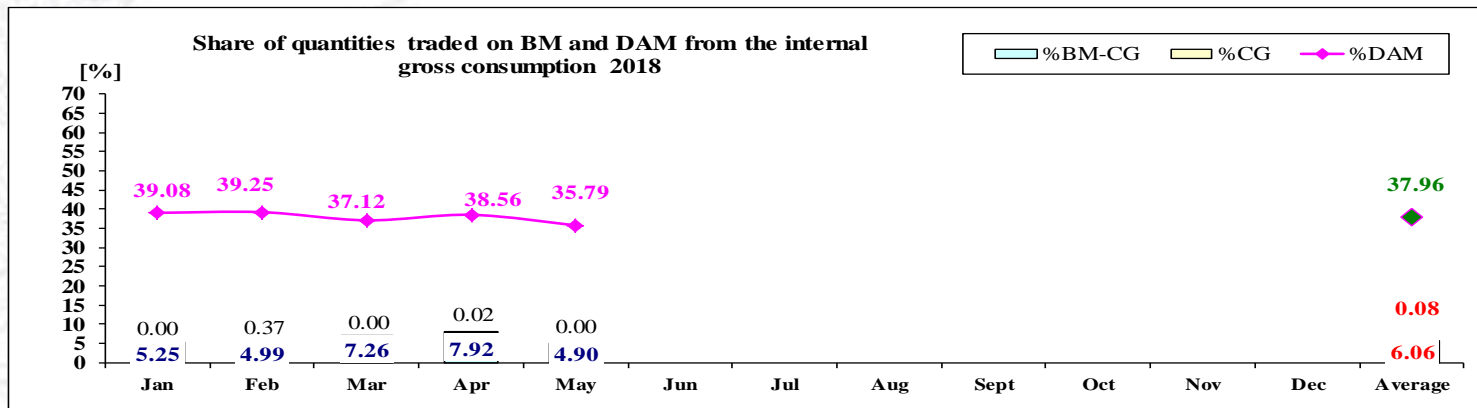
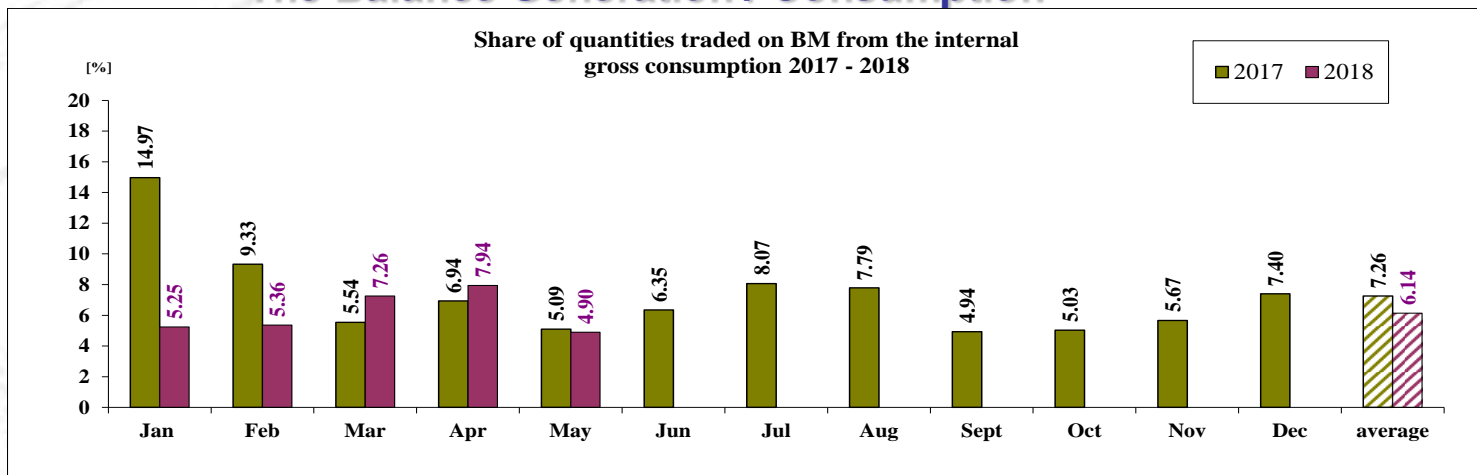


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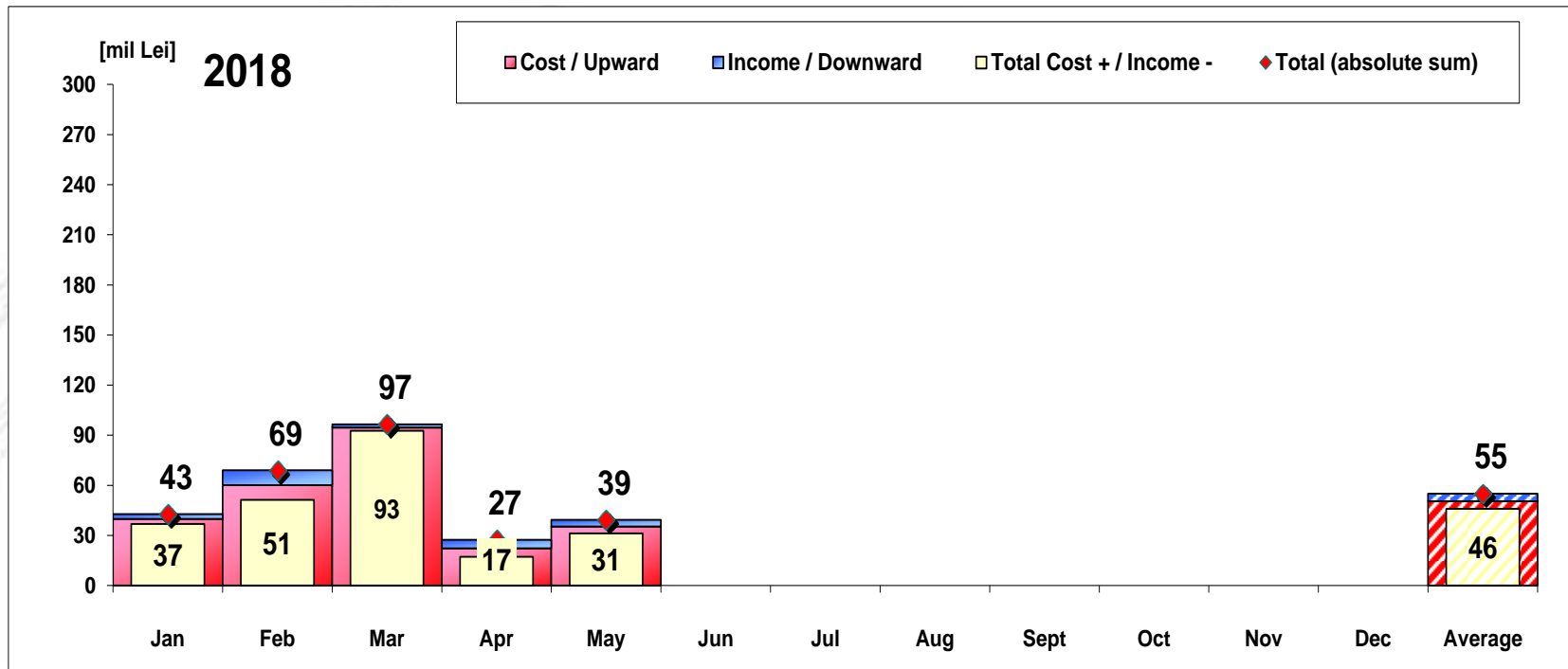


## The Balance Generation / Consumption

• 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).



	2018												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	5.25	5.36	7.26	7.94	4.90								6.14
%DAM	39.08	39.25	37.12	38.56	35.79								37.96
%CG	0.00	0.37	0.00	0.02	0.00								0.079
%BM-CG	5.25	4.99	7.26	7.92	4.90								6.06

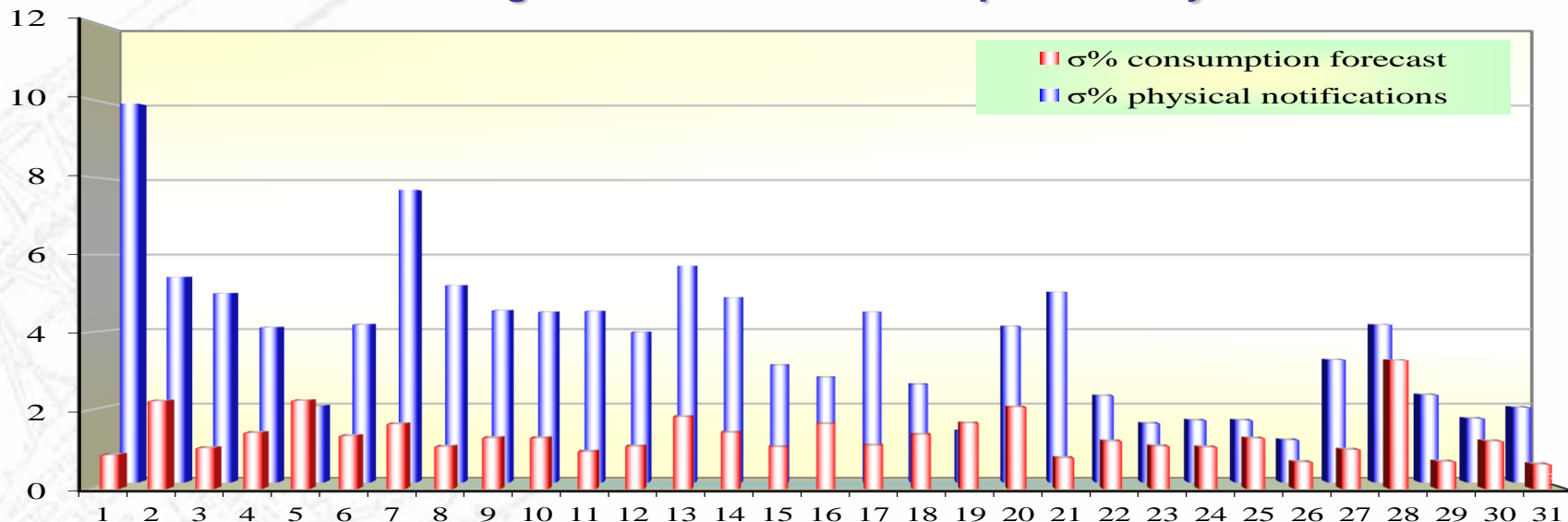


[Lei]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average	Total
Cost / Upward	39 819 143	60 149 383	94 609 129	22 294 472	35 295 644								50 433 554	252 167 770
Income / Downward	2 909 103	8 808 101	1 928 773	5 128 228	4 077 888								4 570 418	22 852 092
CE Cost	0	5 234 582	0	154 594	0								1 077 835	5 389 177
Total Cost + /	36 910 039	51 341 283	92 680 357	17 166 243	31 217 756								45 863 136	229 315 678
Total (absolute sum)	42 728 246	68 957 484	96 537 902	27 422 700	39 373 531								55 003 973	275 019 863

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.

## Standard deviation of physical notifications and consumption forecast against the actual consumption in May 2018



May 2018

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	0.87	2.25	1.04	1.43	2.26	1.35	1.66	1.08	1.30	1.30	0.95	1.08	1.84	1.44	1.07	1.66	1.11	1.39	1.68	2.09	0.79	1.22	1.09	1.06	1.29	0.68	1.00	3.29	0.70	1.22	0.63
σ% physical notifications	9.97	5.41	4.98	4.08	2.00	4.16	7.70	5.19	4.53	4.48	4.51	3.95	5.70	4.87	3.08	2.76	4.48	2.58	1.34	4.11	5.02	2.28	1.55	1.63	1.63	1.11	3.23	4.15	2.30	1.68	1.97

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

**R = Realized Consumption;**

**N = Physical Notifications;**

**P = Consumption Forecast.**

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

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**σ<sub>average % consumption forecast</sub> = 1.35**

**σ<sub>average % physical notifications</sub> = 3.76**



## Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 92 BRPs, 121 market participants, holding 238 commercially operating dispatchable units. The production units TA1 and TA6 Turceni were removed from the list of dispatchable units starting with 01.05.2018, as a result of the modification, by ANRE decision no. 383 / 14.03.2018, of the specific conditions associated with the license no. 1085, granted to the operator Complexul Energetic Oltenia S.A. for the commercial exploitation of the capacities for the production of electric and thermal energy in cogeneration.

### Cantitati si preturi selectate pentru echilibrare - date statistice

May 2018

#### Downward regulation

	Prices [lei/MWh]			Quantities [MWh]		
	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	22.94	150.00	0.10	45734.56	45734.56	0.00%
Fast Tertiary	43.86	350.00	0.10	62212.42	57998.70	6.77%
Slow Tertiary	23.05	249.00	0.20	17406.17	16918.67	2.80%
				125353.16	120651.94	3.75%

#### Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	324.75	480.00	250.00	39410.47	39410.47	0.00%
Fast Tertiary	305.90	445.00	0.10	76444.57	73121.40	4.35%
Slow Tertiary	272.26	349.00	249.00	358.00	317.11	11.42%
				116213.04	112848.97	2.89%

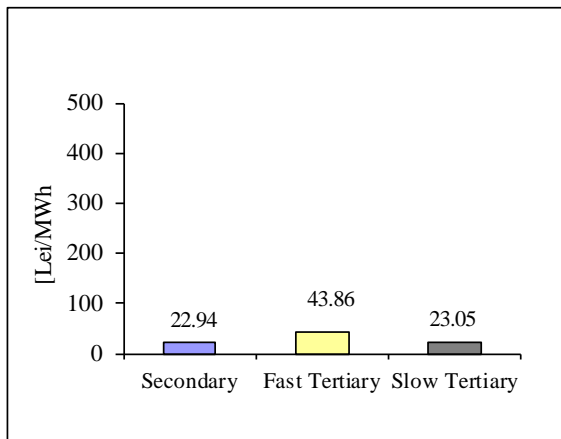
Participants						
	C1	C3	C1	C3	HHI	HHI
Number	(selected)		(actually delivered)		(selected)	(actually delivered)
4	65.61%	98.94%	65.61%	98.94%	5269	5269
10	77.88%	99.19%	81.59%	99.25%	6391	6863
4	75.88%	99.98%	75.47%	99.98%	6056	6005

Participants						
	C1	C3	C1	C3	HHI	HHI
Number	(selected)		(actually delivered)		(selected)	(actually delivered)
4	65.27%	98.88%	65.27%	98.88%	5258	5258
12	58.44%	92.45%	60.29%	93.05%	4336	4477
6	69.83%	91.06%	70.97%	90.92%	5154	5301

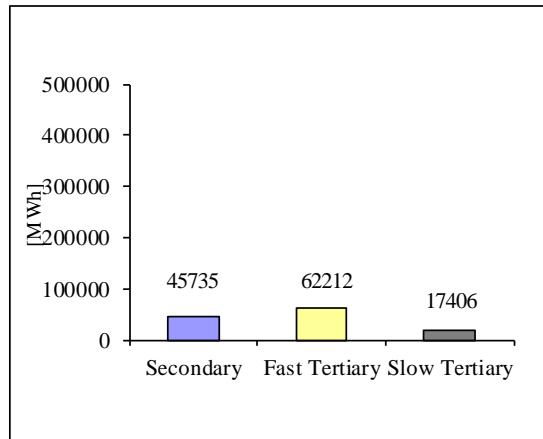


## Balancing energy – Selected prices and quantities in May 2018

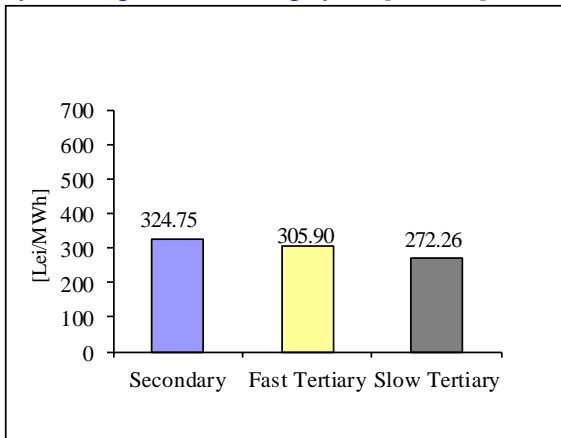
Downward regulation - average price [lei/MWh]



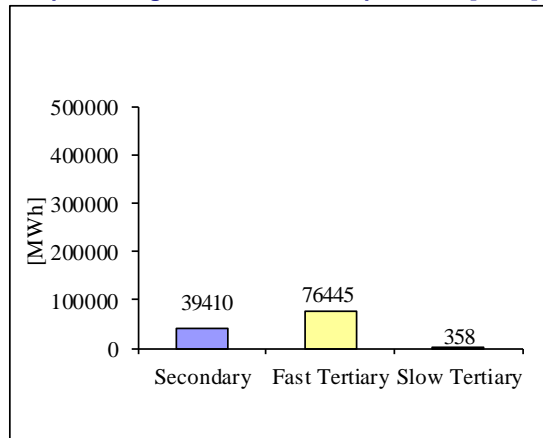
Downward regulation - selected quantities [MWh]



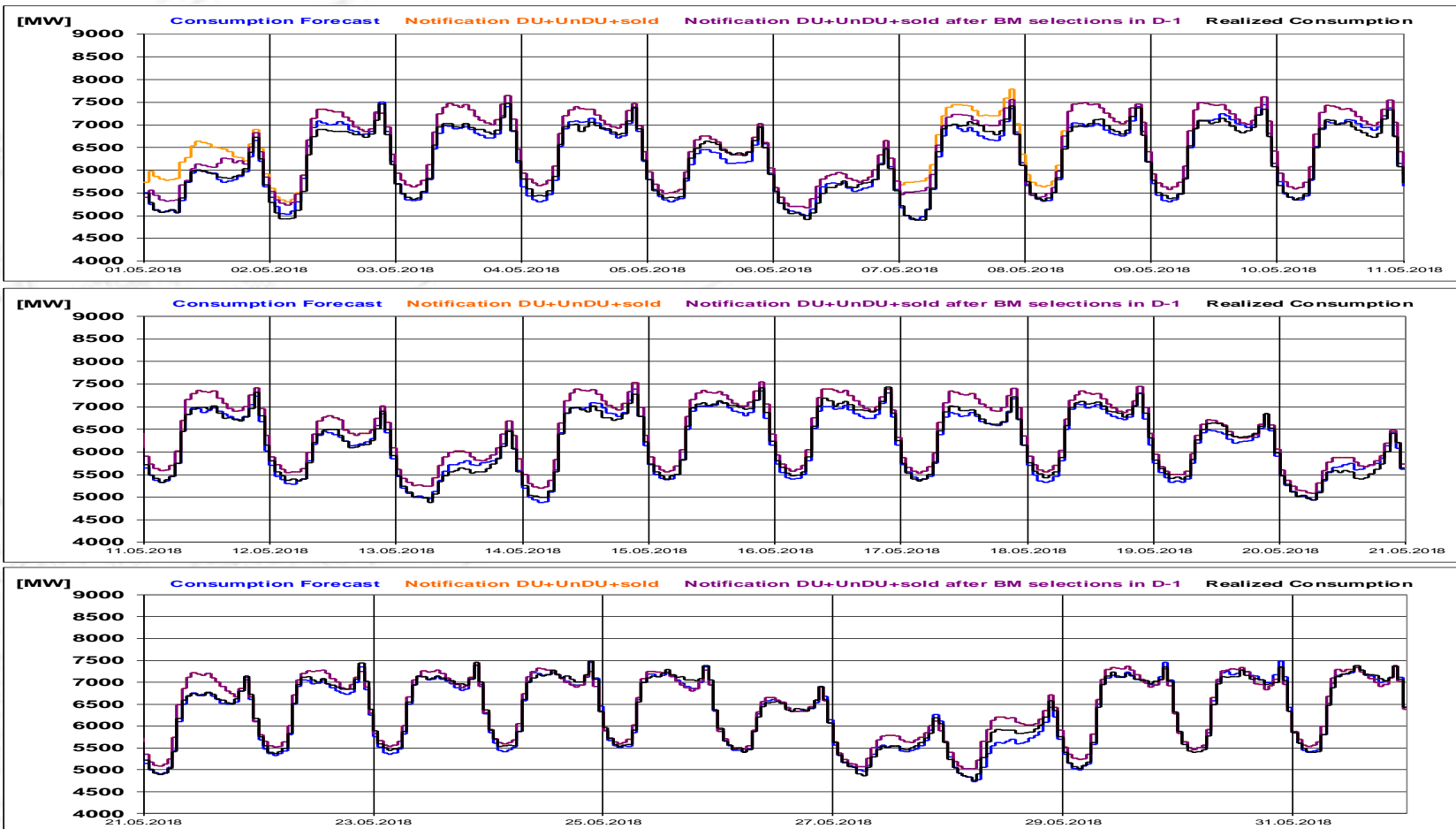
Upward regulation - average price [lei/MWh]



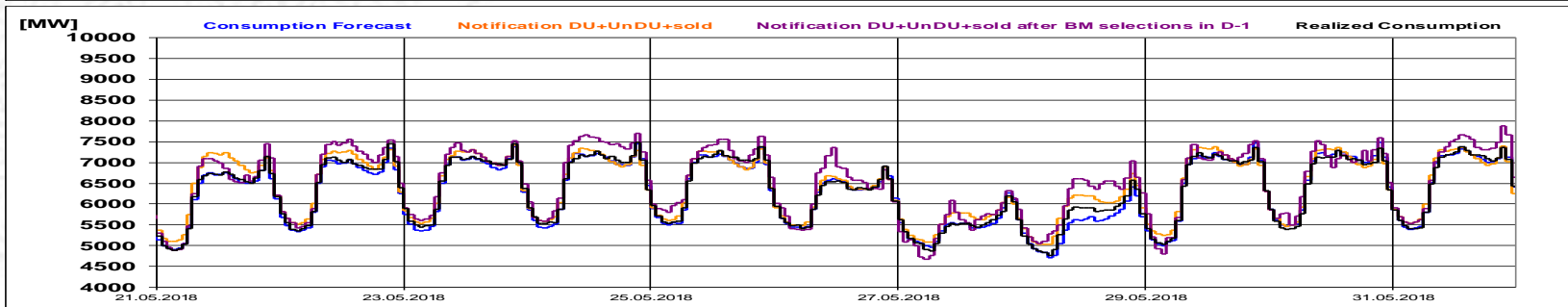
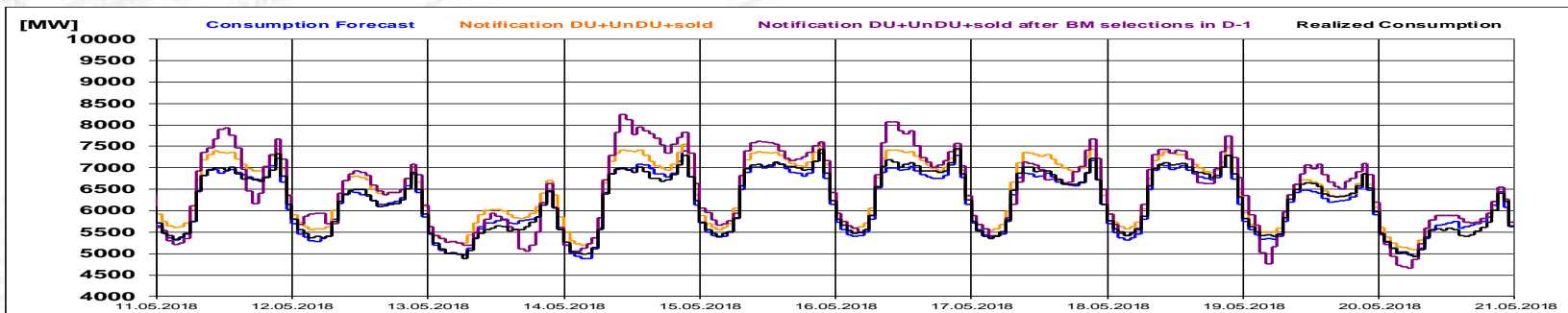
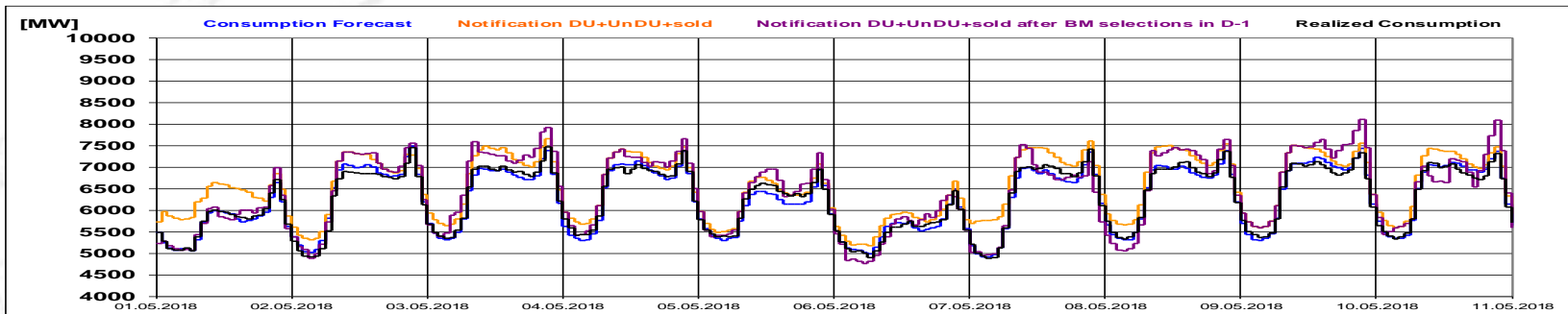
Upward regulation - selected quantities [MWh]



## Realized consumption. forecast. notifications. notifications after BM selections in D-1

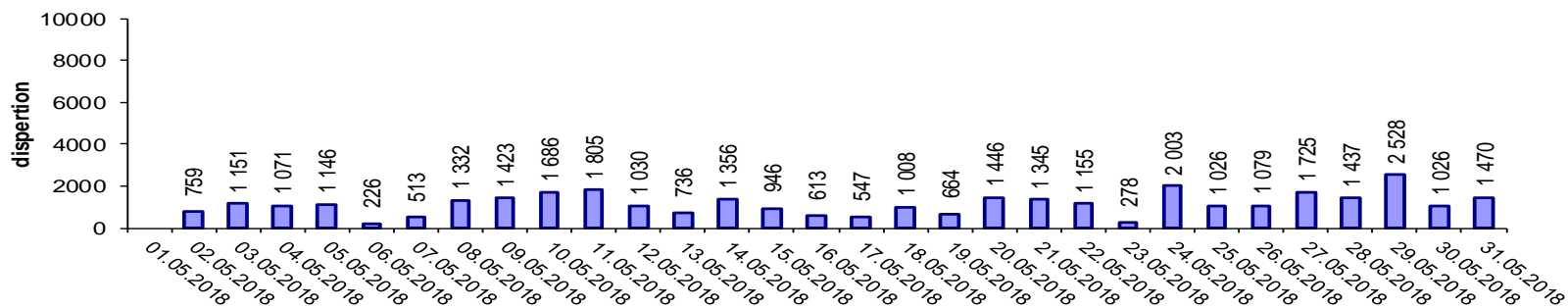


## Realized consumption. forecast. notifications. notifications after BM selections in D (end of delivery day)

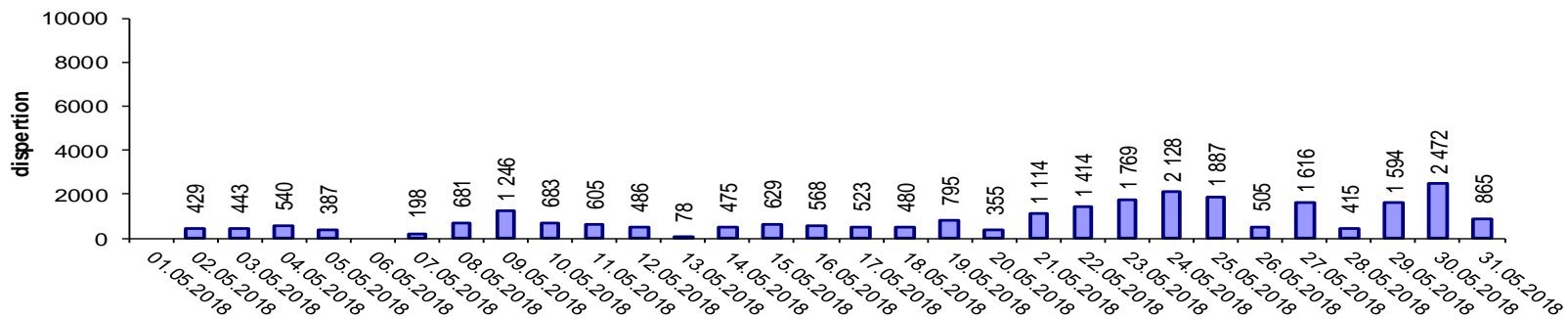


## Indicators – Price Volatility for Secondary Regulation

Price Volatility for Secondary Upward Regulation



Price Volatility for Secondary Downward Regulation



**Volatility = price dispersion on studied interval:**

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

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