



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

October 2017



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Societate Administrată în Sistem Dualist

Abbreviations

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



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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).

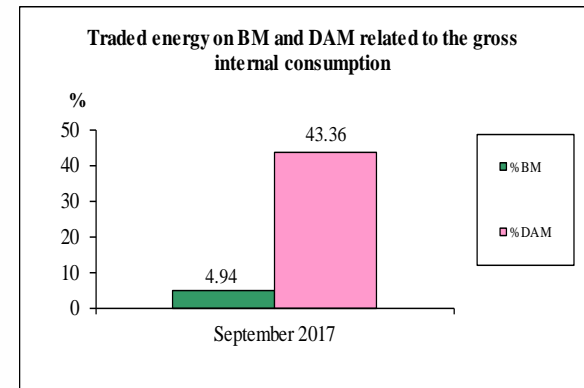
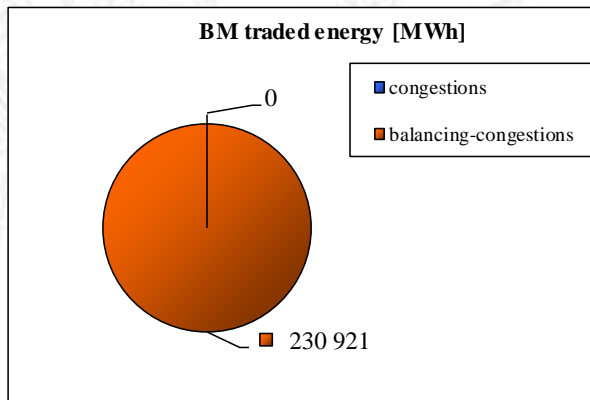


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The Balance Generation/Consumption

- The average monthly value of generated power was 6 976 MW and the actual internal gross consumption was 6 847 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 1,51 %. 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 3,06 %. The greatest daily deviation, regarding the notifications, was registered in 14.10 (5,90 %).
- The energy used in October 2017 for balancing the power system and congestion management was 256 795 MWh (with an average power of 345 MW, which means **5,03** % from the internal gross consumption).
- The energy traded in October 2017 on Day Ahead Market was 1 904 309 MWh (with an average power of 2 556 MW, which means **37,33** % from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was **47 032 740 lei** (with an average weighted price of 183 lei/MWh).





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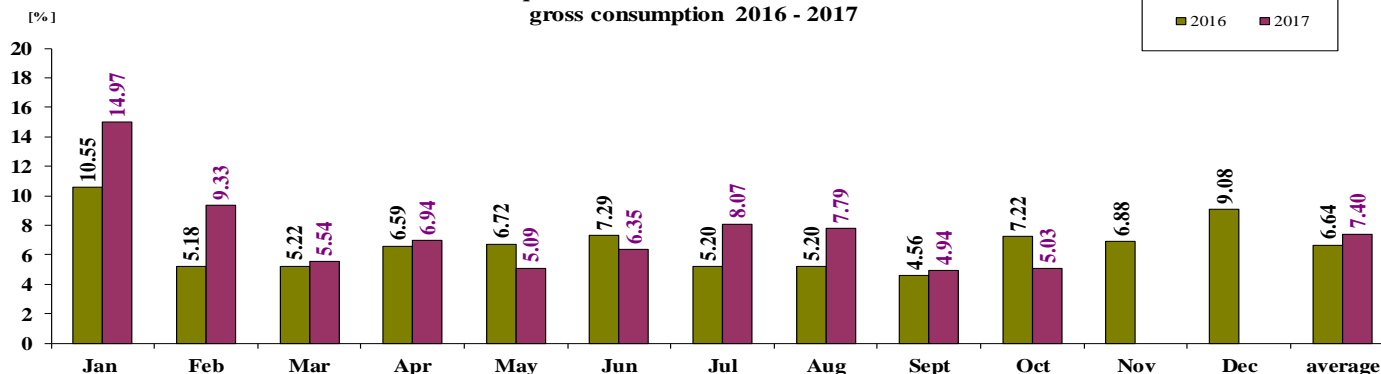
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The Balance Generation / Consumption

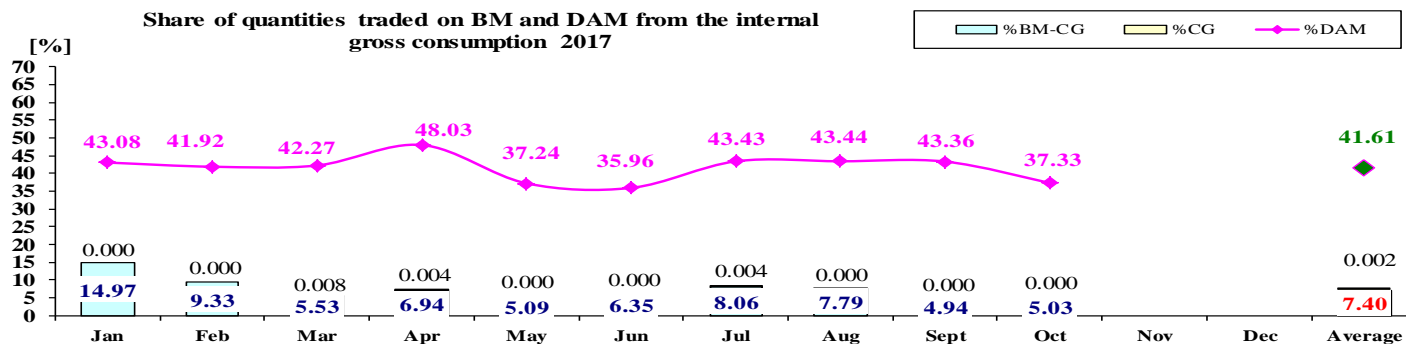
• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption.

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).

Share of quantities traded on BM from the internal gross consumption 2016 - 2017



Share of quantities traded on BM and DAM from the internal gross consumption 2017



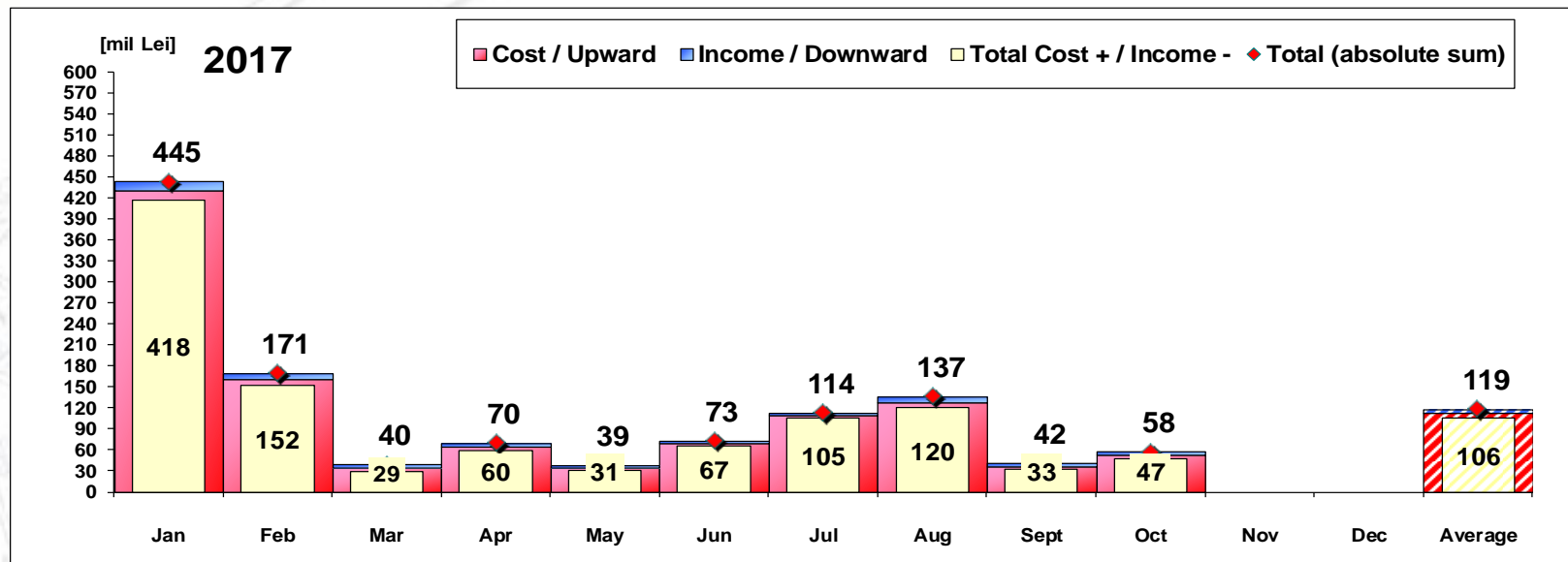
	2017												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	14.97	9.33	5.54	6.94	5.09	6.35	8.07	7.79	4.94	5.03			7.40
%DAM	43.08	41.92	42.27	48.03	37.24	35.96	43.43	43.44	43.36	37.33			41.61
%CG	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00			0.002
%BM-CG	14.97	9.33	5.53	6.94	5.09	6.35	8.06	7.79	4.94	5.03			7.40



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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	431 393 249	161 133 423	34 549 755	65 001 668	35 309 182	70 005 187	109 496 928	128 792 754	37 214 349	52 659 598			112 555 609	1125 556 092
Income / Downward	13 186 568	9 389 350	5 081 592	5 304 021	3 844 149	3 382 836	4 036 941	8 429 060	4 319 729	5 626 857			6 260 110	62 601 103
CE Cost	0	0	39 746	1 614	0	0	52 284	0	0	0			9 364	93 643
Total Cost + / Income -	418 206 681	151 744 073	29 468 163	59 697 647	31 465 033	66 622 351	105 459 987	120 363 694	32 894 619	47 032 740			106 295 499	1062 954 989
Total (absolute sum)	444 579 817	170 522 773	39 631 347	70 305 689	39 153 331	73 388 022	113 533 869	137 221 813	41 534 078	58 286 455			118 815 719	1188 157 195

CE – Congestion Energy

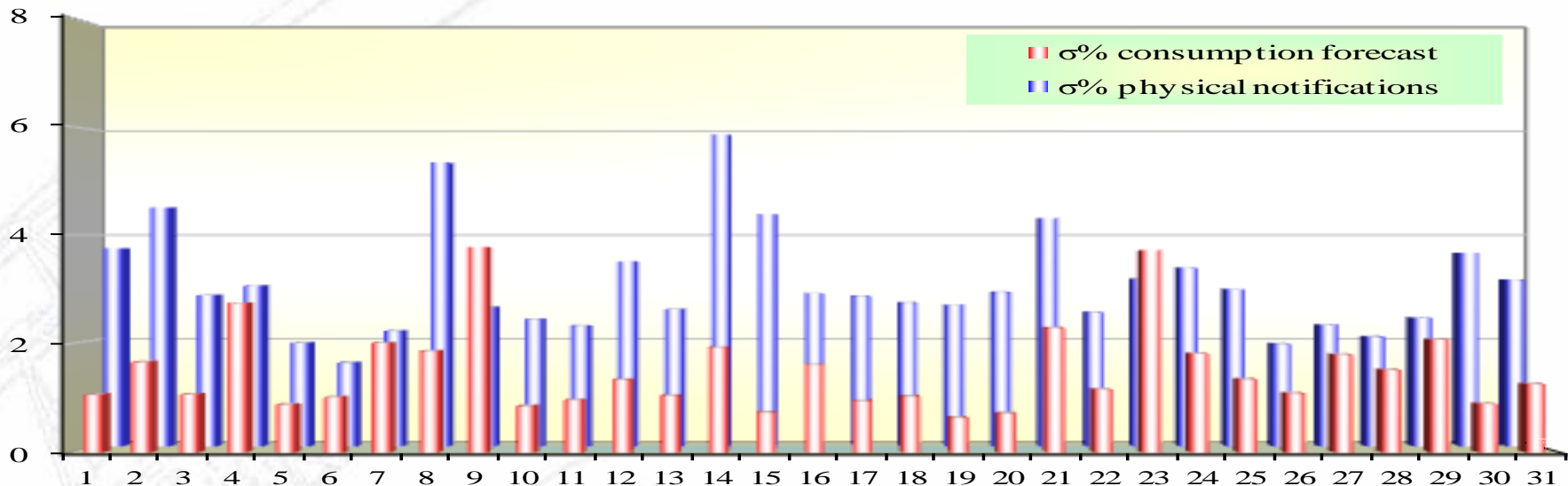
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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Standard deviation of physical notifications and consumption forecast against the actual consumption in October 2017



October 2017

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	1.06	1.66	1.07	2.75	0.88	1.02	2.02	1.87	3.78	0.85	0.96	1.34	1.04	1.93	0.73	1.61	0.94	1.03	0.63	0.72	2.29	1.15	3.72	1.81	1.35	1.08	1.80	1.52	2.08	0.89	1.26
σ% physical notifications	3.74	4.52	2.86	3.04	1.95	1.58	2.18	5.37	2.63	2.41	2.28	3.50	2.59	5.90	4.39	2.89	2.84	2.72	2.67	2.92	4.32	2.54	3.17	3.38	2.97	1.94	2.30	2.07	2.43	3.66	3.15

σ_{average}% consumption forecast = 1.51

σ_{average} % physical notifications = 3.06

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

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

Public

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

Balancing energy – Selected prices and quantities

At the beginning of the month on the Balancing Market operated 91 BRPs, 124 market participants, holding 241 commercially operating dispatchable units.

October 2017

Downward regulation

	Prices [lei/MWh]		
	Monthly	Maximum	Minimum
average			
Secondary	43.88	300.00	0.10
Fast Tertiary	81.13	349.00	0.10
Slow Tertiary	0.93	1.00	0.20

Quantities [MWh]		
Total	Actually	Deviation
selected	delivered	%
50758.45	50758.45	0.00%
44842.02	40933.67	8.72%
1202.17	982.16	18.30%
96802.64	92674.27	4.26%

Participants					
	C1	C3	C1	C3	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)
5	59.69%	99.74%	59.69%	99.74%	4876
10	60.18%	98.67%	62.14%	99.18%	4491
2	89.93%	100.00%	90.34%	100.00%	8188
					8255

Upward regulation

	Monthly	Maximum	Minimum
	average		
Secondary	338.20	710.30	250.00
Fast Tertiary	311.31	550.00	0.10
Slow Tertiary	324.83	499.00	0.10

Quantities [MWh]		
Total	Actually	Deviation
selected	delivered	%
41726.03	41726.03	0.00%
109681.02	104833.79	4.42%
17602.24	17561.20	0.23%

Participants					
	C1	C3	C1	C3	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)
5	59.12%	99.77%	59.12%	99.77%	4844
14	69.70%	89.45%	71.98%	89.58%	5084
11	47.40%	93.48%	47.46%	93.49%	3402
					3407



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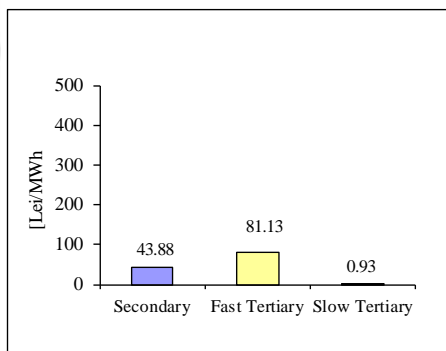
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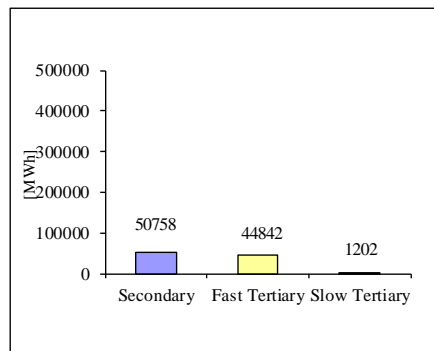
Balancing energy – Selected prices and quantities in October 2017

October 2017

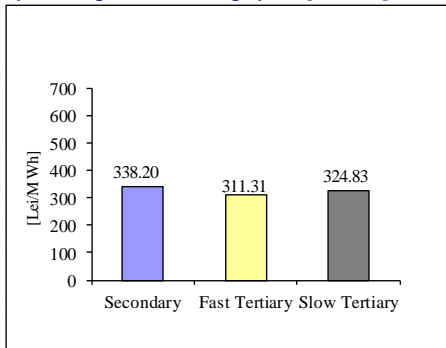
Downward regulation - average price [lei/MWh]



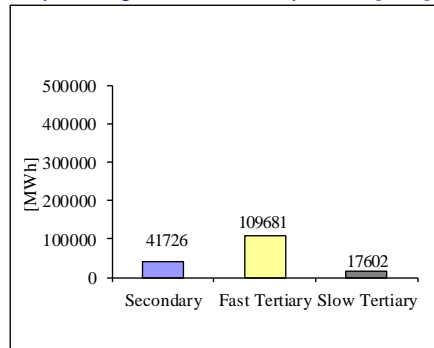
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



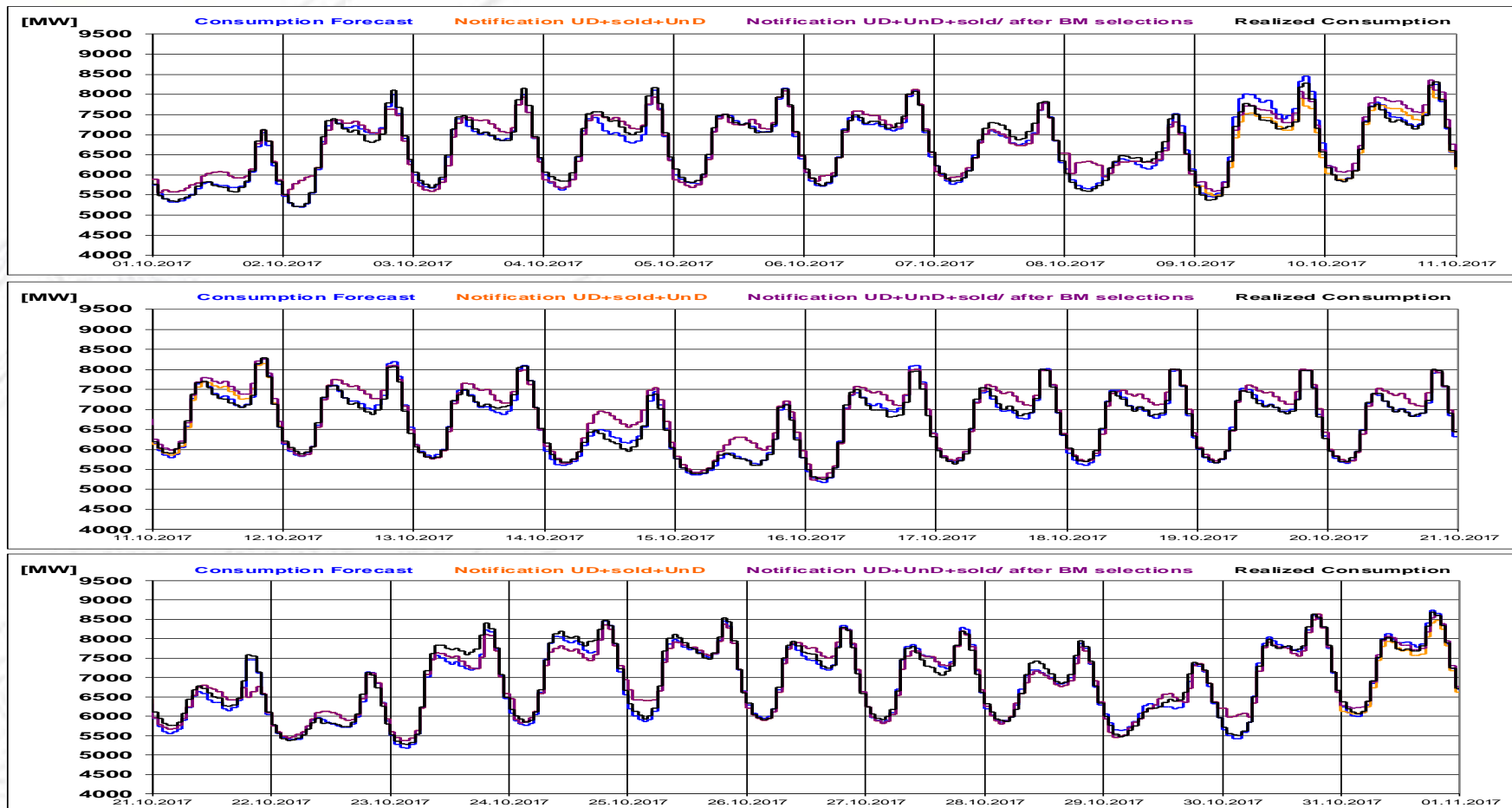


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Realized consumption. forecast. notifications.
notifications after BM selections in D-1



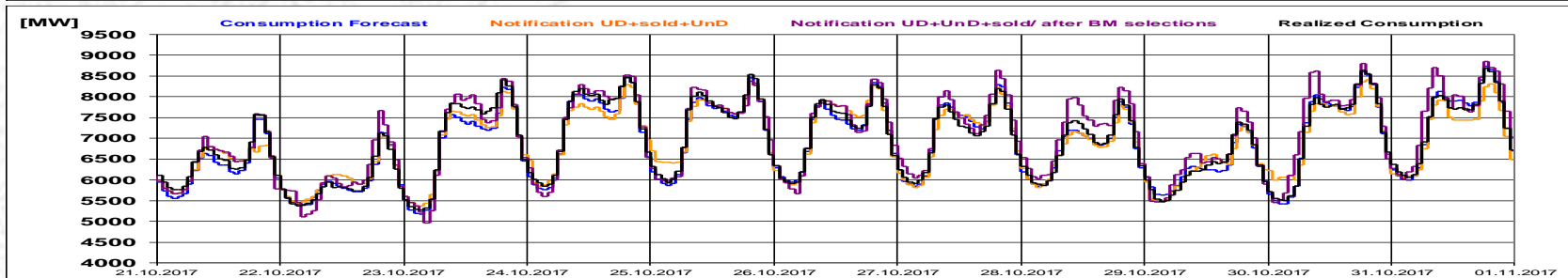
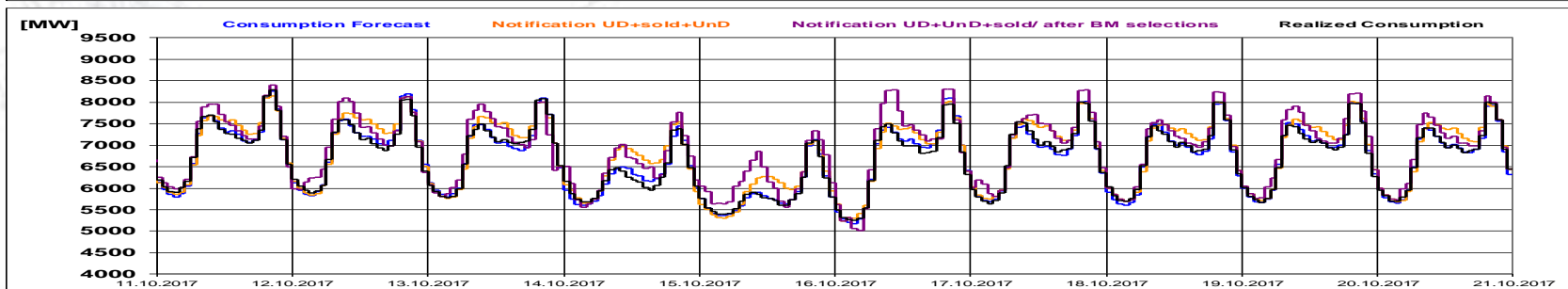
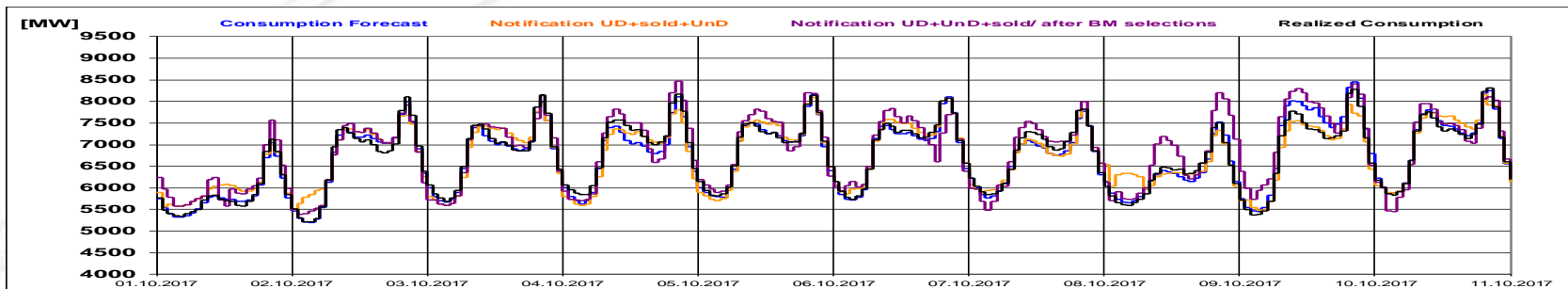


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Balancing Market

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





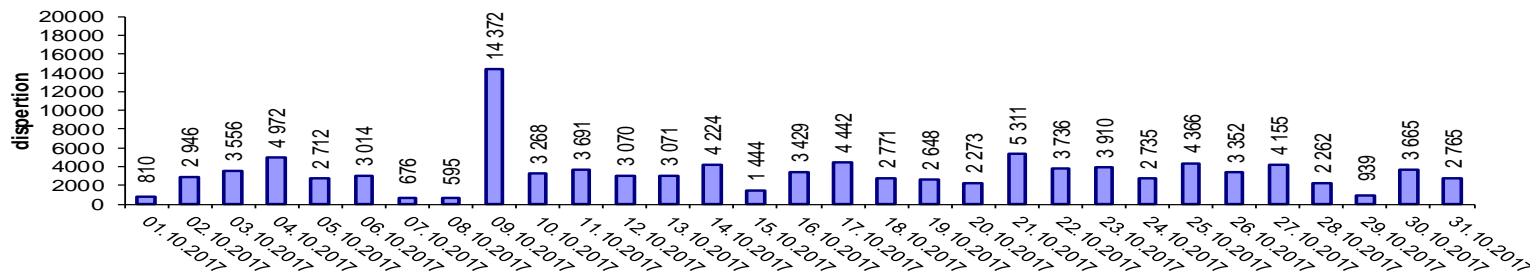
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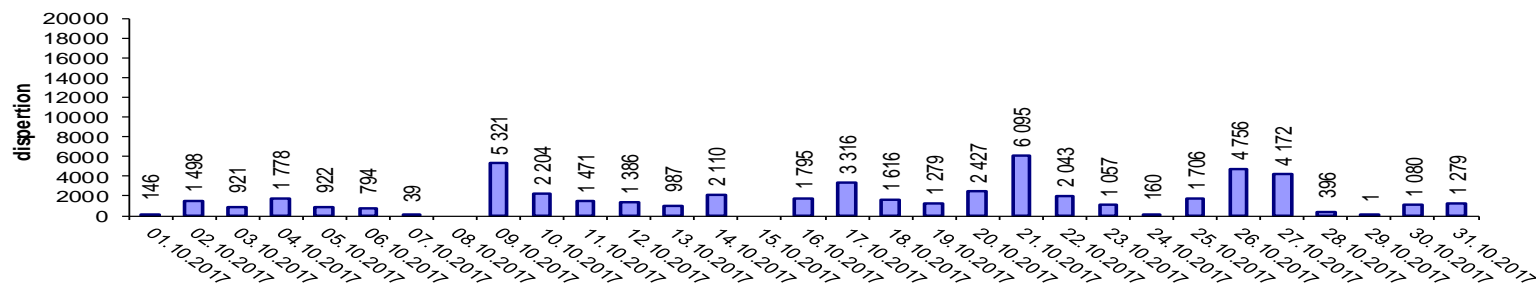
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Indicators – Price Volatility for Secondary Regulation

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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