



Transelectrica®  
Societate Administrată în Sistem Dualist

# MARKET MONITORING REPORT

## Balancing Market

June 2017



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## 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.

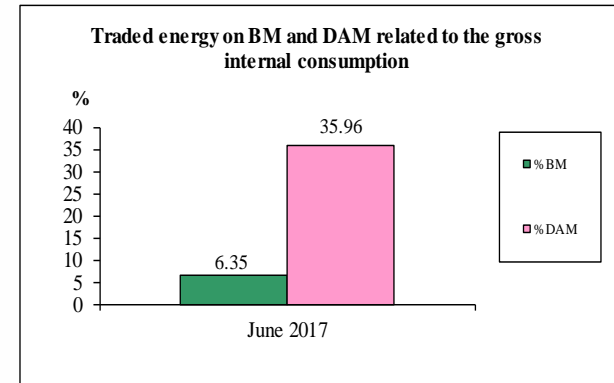
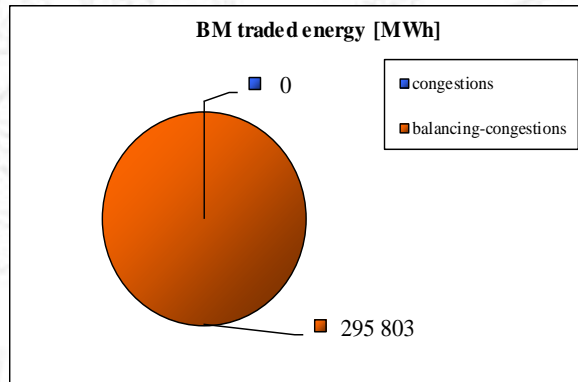
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website **[www.transelectrica.ro](http://www.transelectrica.ro)** (section Transparency).



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## The Balance Generation/Consumption

- The average monthly value of generated power was 6 779 MW and the actual internal gross consumption was 6 471 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 2,03 %. 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 3,24 %. The greatest daily deviation, regarding the notifications, was registered in 05.06 (8,11 %).
- The energy used in June 2017 for balancing the power system and congestion management was 295 803 MWh (with an average power of 411 MW, which means **6,35 %** from the internal gross consumption).
- The energy traded in June 2017 on Day Ahead Market was 1 675 338 MWh (with an average power of 2 327 MW, which means **35,96 %** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was **66 622 351 lei** (with an average weighted price of 225 lei/MWh).





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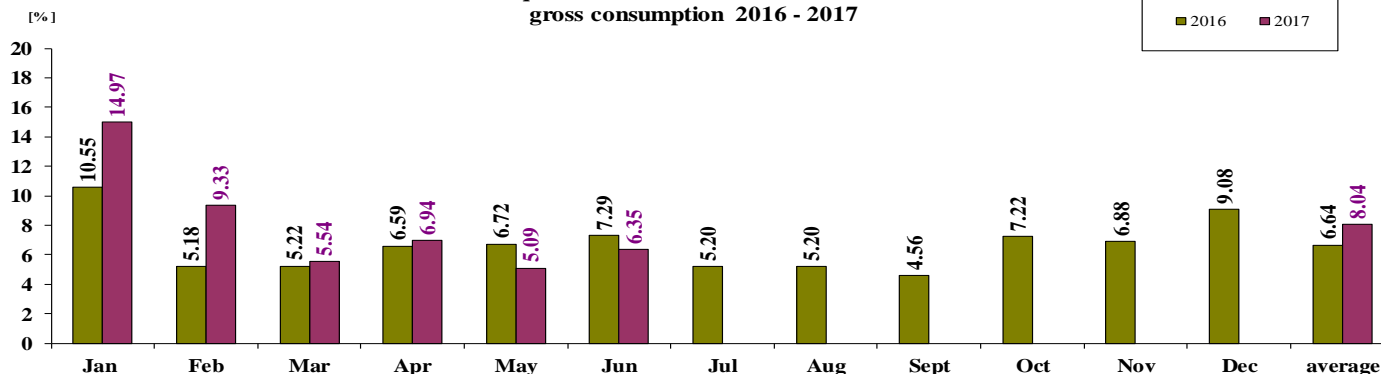
# Balancing Market

## The Balance Generation / Consumption

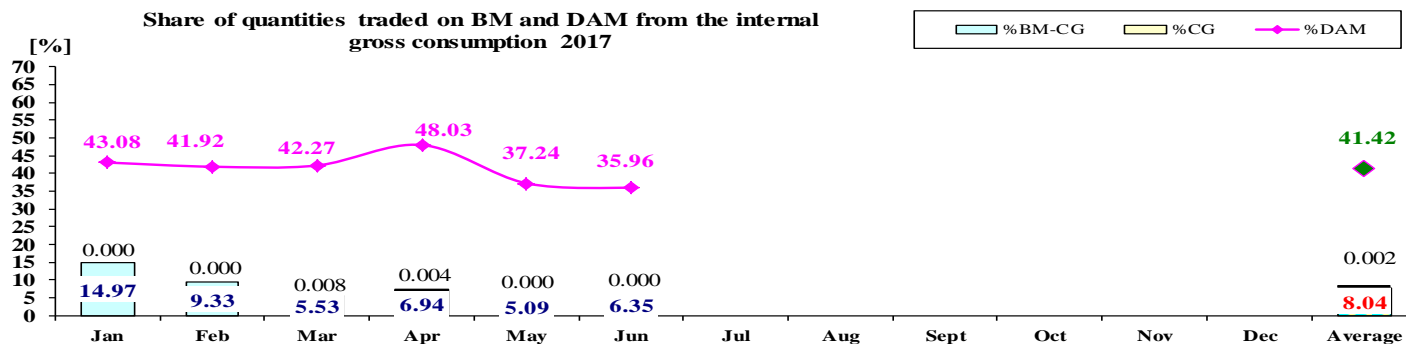
• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption.

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).

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



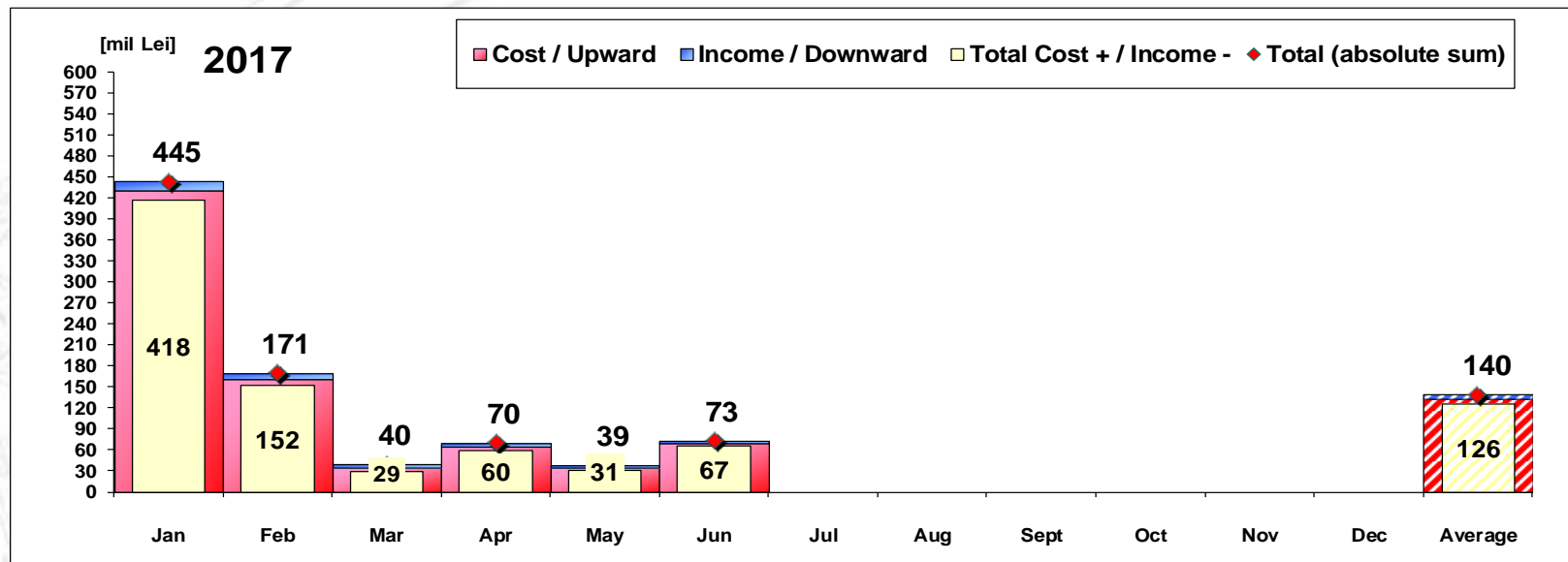
	2017												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	14.97	9.33	5.54	6.94	5.09	6.35							8.04
%DAM	43.08	41.92	42.27	48.03	37.24	35.96							41.42
%CG	0.00	0.00	0.01	0.00	0.00	0.00							0.002
%BM-CG	14.97	9.33	5.53	6.94	5.09	6.35							8.04



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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							132 898 744	797 392 463
Income / Downward	13 186 568	9 389 350	5 081 592	5 304 021	3 844 149	3 382 836							6 698 086	40 188 515
CE Cost	0	0	39 746	1 614	0	0							6 893	41 360
Total Cost + / Income -	418 206 681	151 744 073	29 468 163	59 697 647	31 465 033	66 622 351							126 200 658	757 203 948
Total (absolute sum)	444 579 817	170 522 773	39 631 347	70 305 689	39 153 331	73 388 022							139 596 830	837 580 979

## CE – Congestion Energy

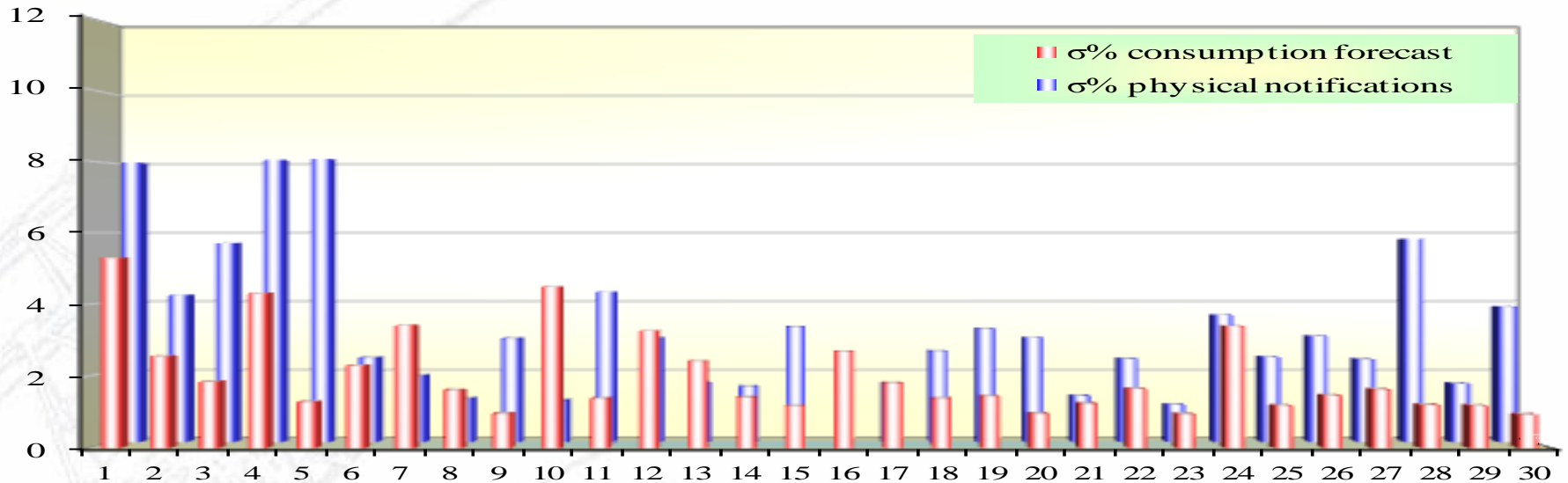
\* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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



June 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
σ% consumption forecast	5.30	2.55	1.84	4.31	1.28	2.29	3.42	1.61	0.96	4.49	1.38	3.26	2.42	1.41	1.17	2.68	1.81	1.38	1.44	0.95	1.24	1.65	0.94	3.39	1.18	1.46	1.63	1.20	1.18	0.93
σ% physical notifications	8.00	4.21	5.70	8.09	8.11	2.42	1.90	1.24	2.97	1.19	4.30	2.98	1.68	1.59	3.30	1.48	1.67	2.61	3.25	2.99	1.32	2.38	1.07	3.63	2.44	3.03	2.37	5.82	1.67	3.88

**σ<sub>average</sub> % consumption forecast = 2.03**

**σ<sub>average</sub> % physical notifications = 3.24**

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

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

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**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, 123 market participants, holding 238 commercially operating dispatchable units.

June 2017

### Downward regulation

	Prices [lei/MWh]			Quantities [MWh]		
	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	27.08	100.00	0.10	45724.98	45724.98	0.00%
Fast Tertiary	59.87	180.60	0.10	38369.29	34718.17	9.52%
Slow Tertiary	1.92	110.00	0.20	623.00	513.26	17.61%
				84717.27	80956.41	4.44%

### Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	338.65	450.00	250.00	40578.36	40578.36	0.00%
Fast Tertiary	309.30	430.00	0.10	129497.51	123694.37	4.48%
Slow Tertiary	334.35	420.00	0.10	51310.00	50573.87	1.43%

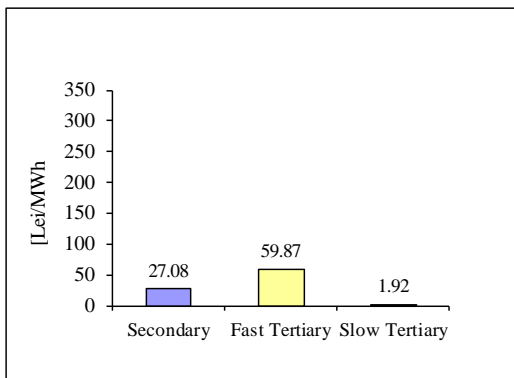
Participants					
	C1	C3	C1	C3	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)
4	55.09%	97.10%	55.09%	97.10%	4534
7	74.63%	99.96%	75.40%	99.99%	6207
3	82.66%	100.00%	85.32%	100.00%	7102
					7495

	C1	C3	C1	C3	HHI	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(selected)	(actually delivered)
4	55.00%	98.02%	55.00%	98.02%	4585	4585
11	74.51%	93.41%	76.74%	93.95%	5762	6060
8	42.61%	96.27%	43.13%	96.32%	3324	3357

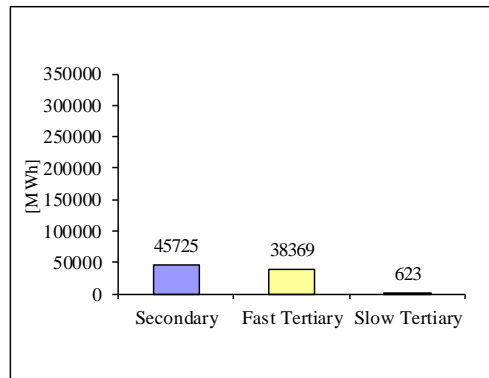


## Balancing energy – Selected prices and quantities in June 2017

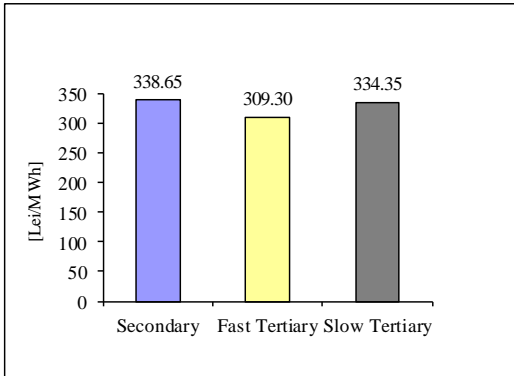
Downward regulation - average price [lei/MWh]



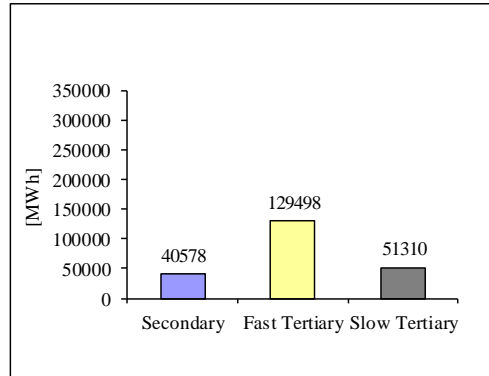
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



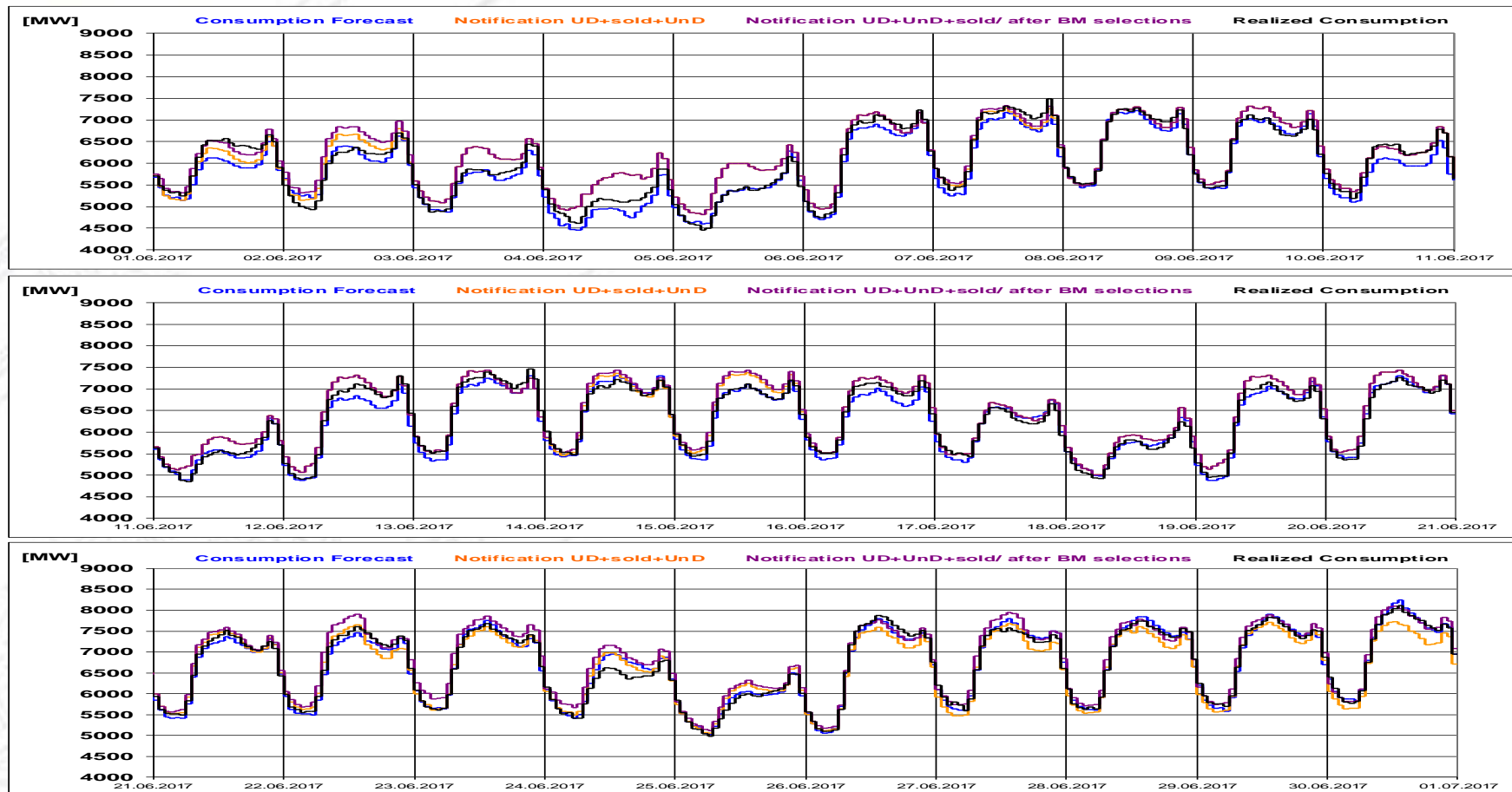


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# Balancing Market

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



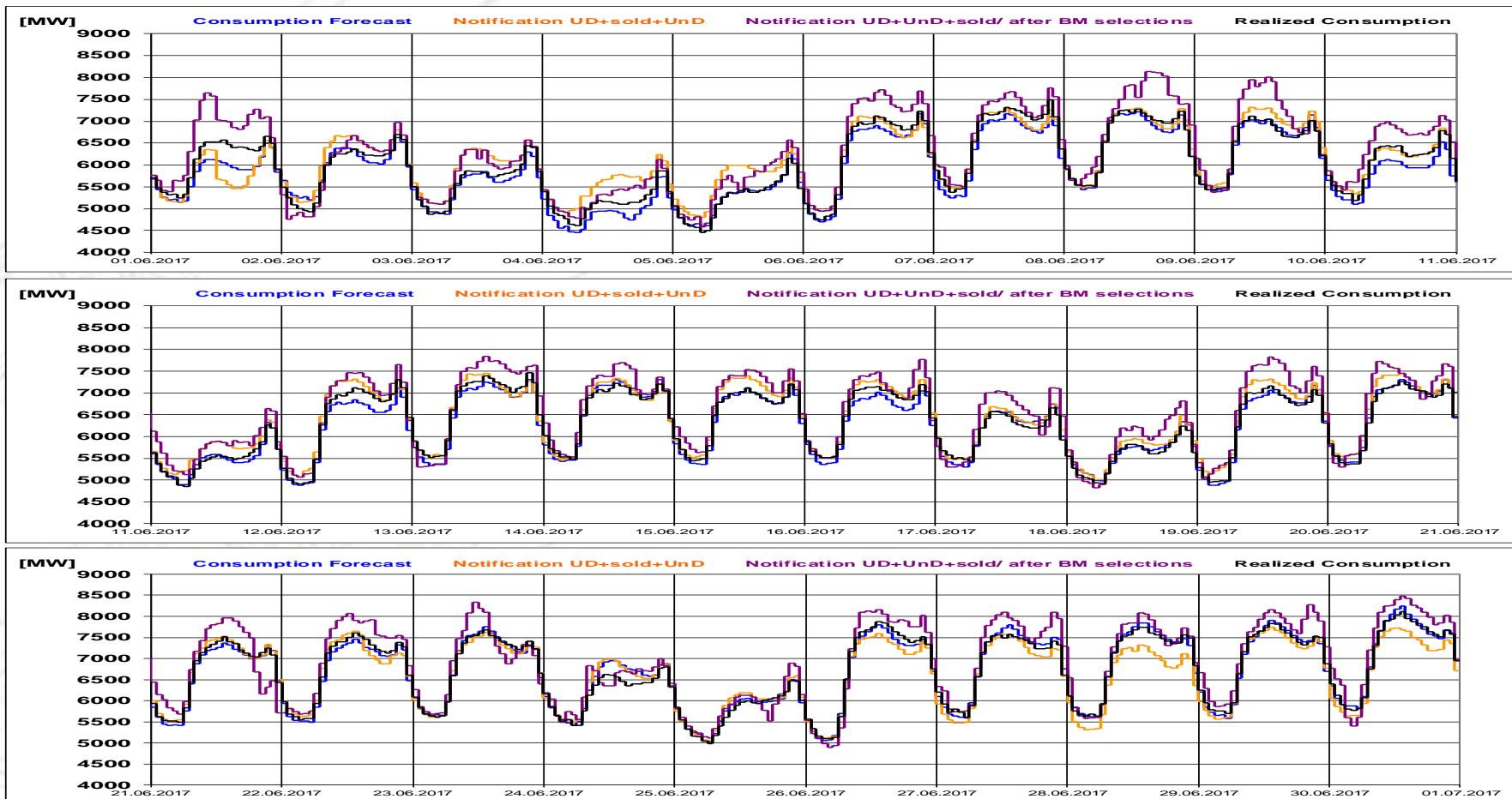


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# Balancing Market

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





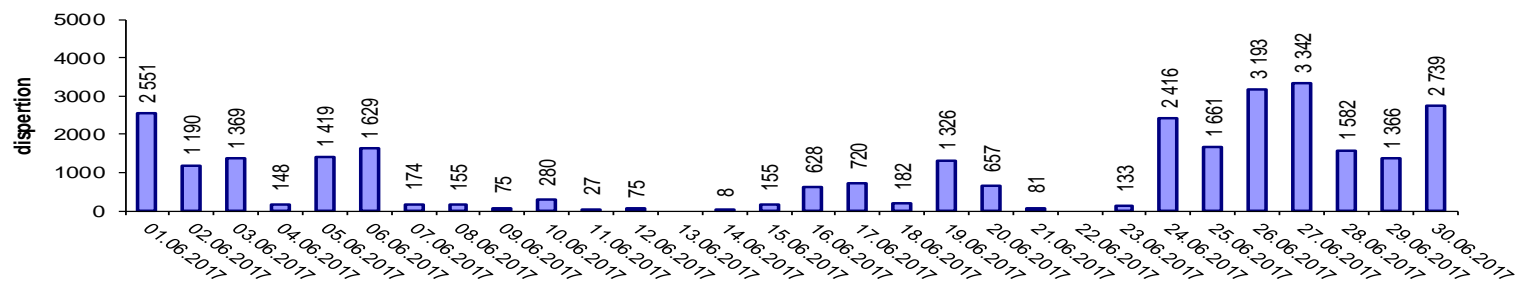
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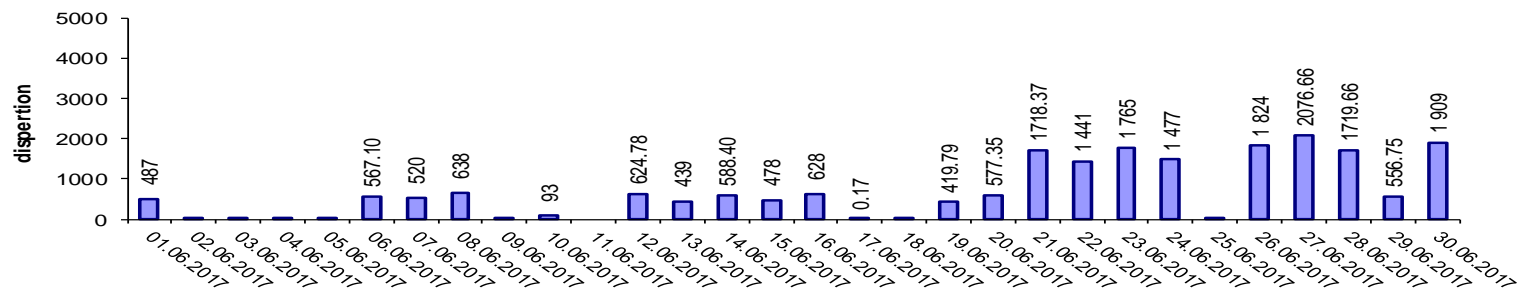
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## Indicators – Price Volatility for Secondary Regulation

**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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