



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

August 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** (section Transparency).

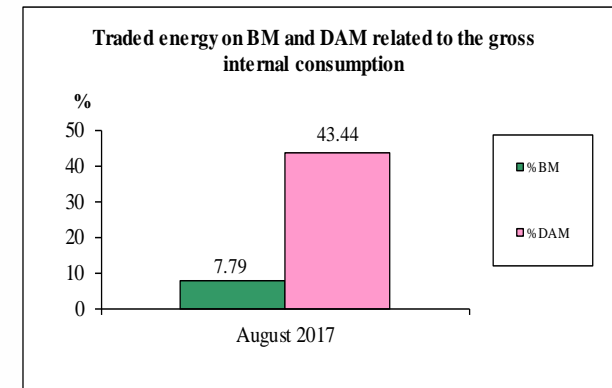
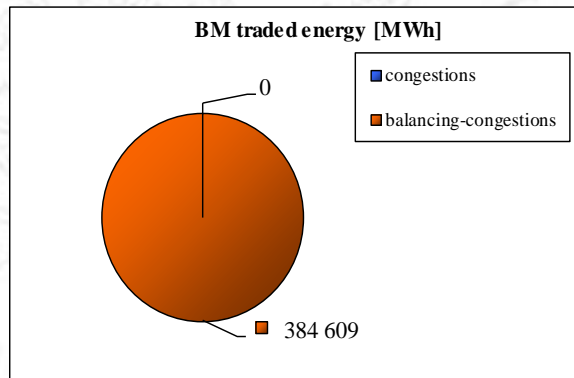


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The Balance Generation/Consumption

- The average monthly value of generated power was 6 571 MW and the actual internal gross consumption was 6 637 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 1,83 %. 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 4,55 %. The greatest daily deviation, regarding the notifications, was registered in 04.08 (14,56 %).
- The energy used in August 2017 for balancing the power system and congestion management was 384 609 MWh (with an average power of 517 MW, which means **7,79 %** from the internal gross consumption).
- The energy traded in August 2017 on Day Ahead Market was 2 145 083 MWh (with an average power of 2 883 MW, which means **43,44 %** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was **120 363 694 lei** (with an average weighted price of 131 lei/MWh).





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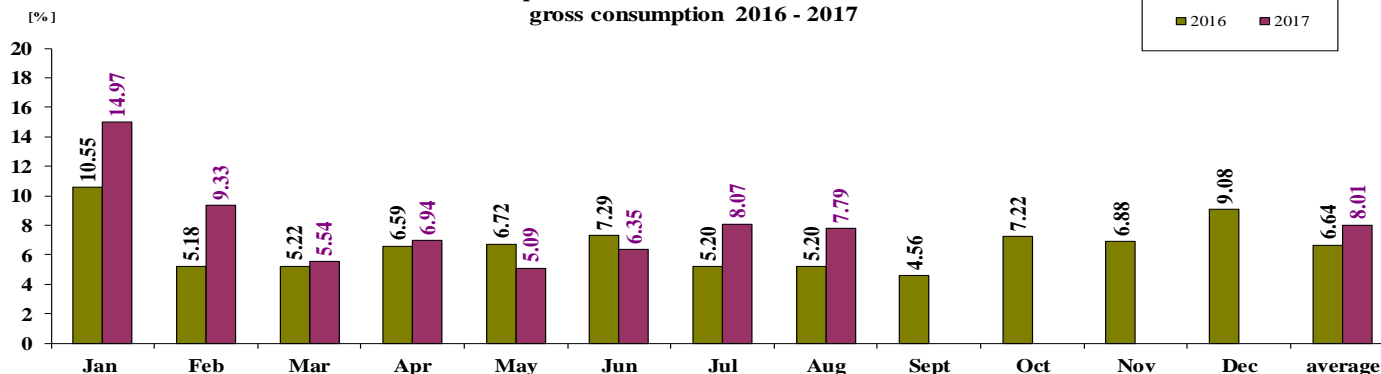
Balancing Market

The Balance Generation / Consumption

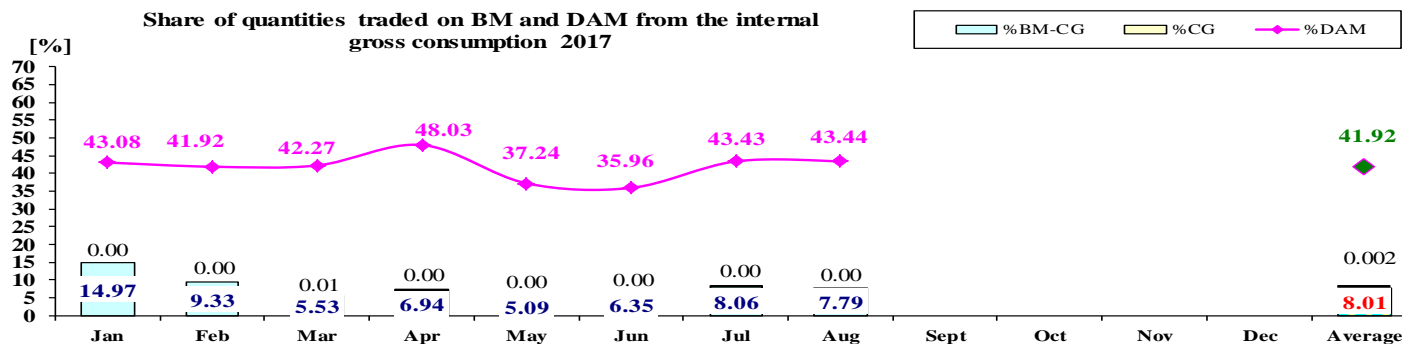
• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption.

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



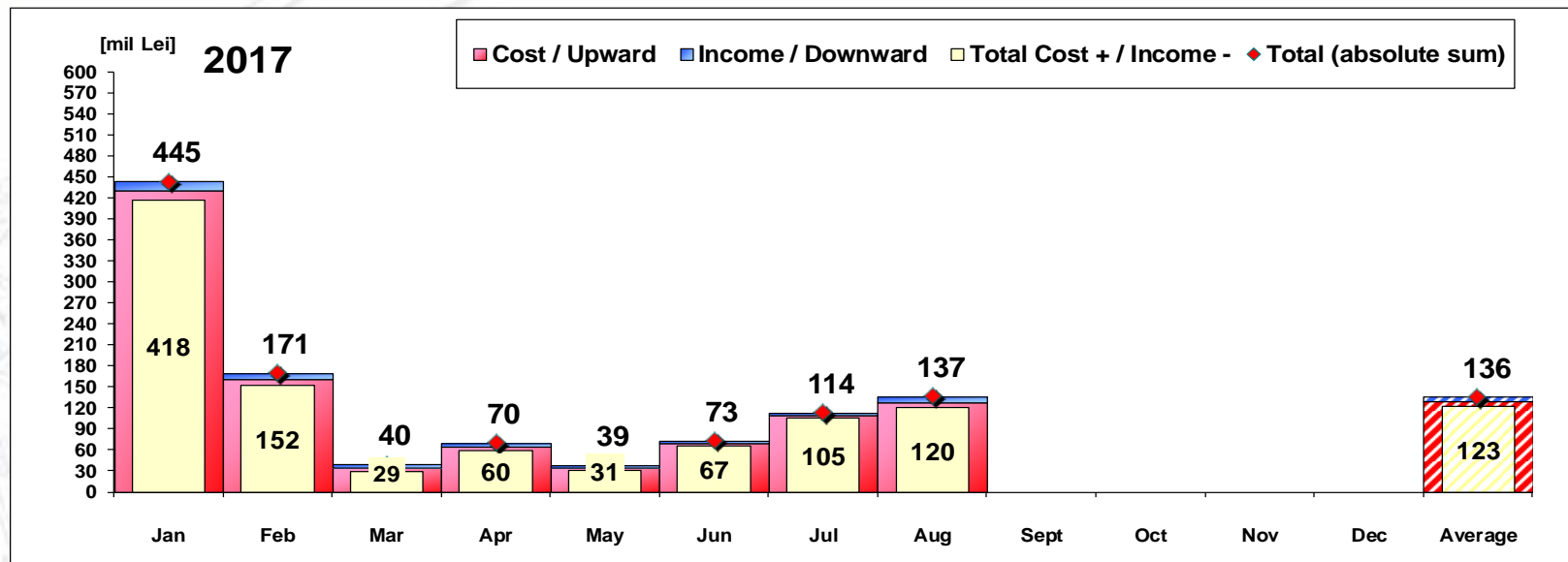
	2017												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	14.97	9.33	5.54	6.94	5.09	6.35	8.07	7.79					8.01
%DAM	43.08	41.92	42.27	48.03	37.24	35.96	43.43	43.44					41.92
%CG	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00					0.002
%BM-CG	14.97	9.33	5.53	6.94	5.09	6.35	8.06	7.79					8.01



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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					129 460 268	1035 682 145
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					6 581 815	52 654 516
CE Cost	0	0	39 746	1 614	0	0	52 284	0					11 705	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					122 878 454	983 027 629
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					136 042 083	1088 336 661

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.

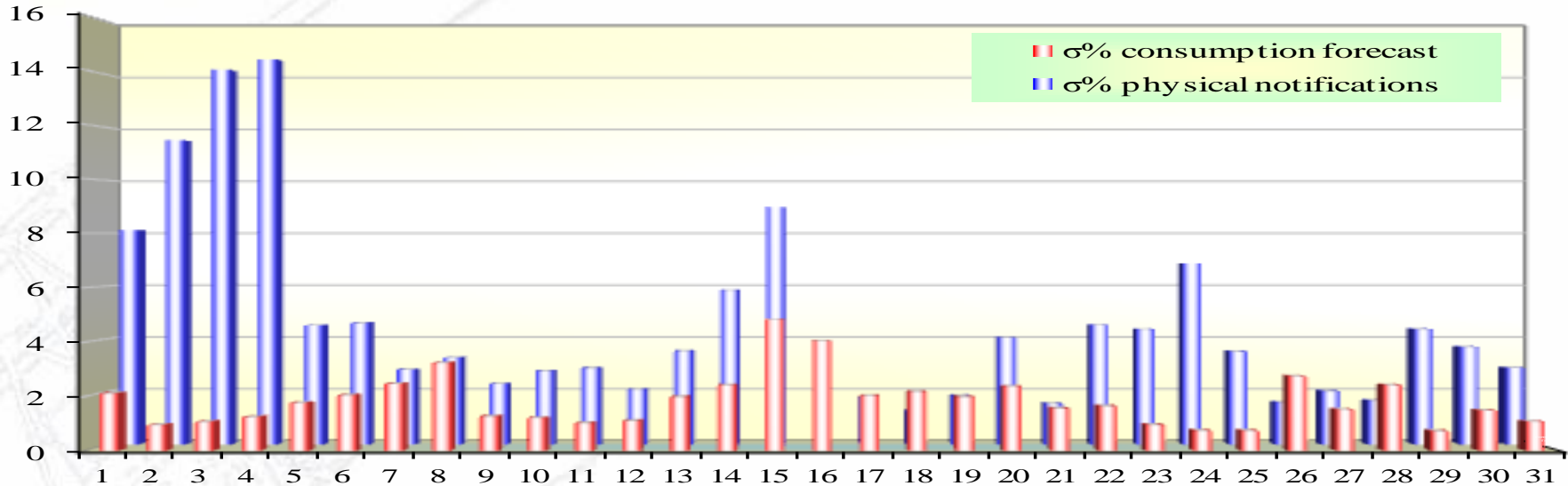


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Standard deviation of physical notifications and consumption forecast against the actual consumption in August 2017



August 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	2.11	0.95	1.06	1.24	1.76	2.04	2.45	3.23	1.25	1.20	1.01	1.09	1.98	2.41	4.81	4.03	2.02	2.16	1.98	2.36	1.55	1.63	0.94	0.74	0.73	2.74	1.51	2.42	0.72	1.48	1.07
σ% physical notifications	8.12	11.51	14.18	14.56	4.51	4.60	2.83	3.29	2.29	2.79	2.89	2.09	3.53	5.84	8.99	3.17	1.77	1.27	1.85	4.05	1.55	4.53	4.36	6.85	3.52	1.60	2.02	1.66	4.36	3.70	2.90

σ_{average} % consumption forecast = 1.83

σ_{average} % physical notifications = 4.55

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

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

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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 90 BRPs, 124 market participants, holding 239 commercially operating dispatchable units. Starting with 4th of August 2017, production units BEPCO NORD 1A (30W-BEPCONRD1A-0) and BEPCO NORD 1B (30W-BEPCONRD1B-Y) were registered as dispatchable units.

August 2017

Downward regulation

	Prices [lei/MWh]			Quantities [MWh]		
	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	72.69	300.00	0.10	46355.02	46355.02	0.00%
Fast Tertiary	75.23	449.00	0.10	60853.08	55496.95	8.80%
Slow Tertiary	107.31	450.00	35.00	8471.42	8287.83	2.17%
				115679.52	110139.81	4.79%

Participants						
	C1	C3	C1	C3	HHI	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(selected)	(actually delivered)
4	58.71%	99.31%	58.71%	99.31%	4914	4914
8	45.40%	99.84%	44.55%	99.93%	3602	3554
4	37.12%	98.13%	37.41%	98.58%	3322	3346

Upward regulation

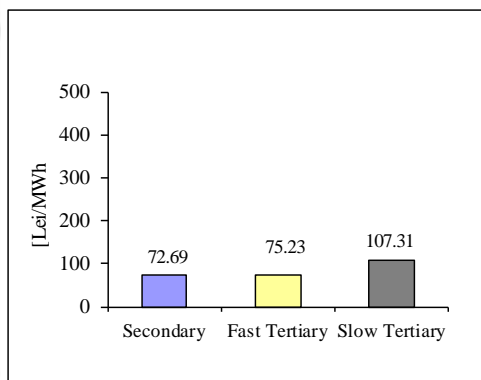
	Prices [lei/MWh]			Quantities [MWh]		
	Monthly	Maximum	Minimum	Total	Actually	Deviation
	average			selected	delivered	%
Secondary	387.78	700.00	250.00	39250.23	39250.23	0.00%
Fast Tertiary	424.71	700.00	0.10	126559.52	120873.14	4.49%
Slow Tertiary	531.82	1019.00	210.00	116029.52	114345.40	1.45%

Participants						
	C1	C3	C1	C3	HHI	HHI
Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(selected)	(actually delivered)
4	56.95%	99.32%	56.95%	99.32%	4701	4701
12	77.49%	94.52%	79.98%	94.56%	6190	6533
11	39.34%	82.43%	39.57%	82.67%	2893	2901

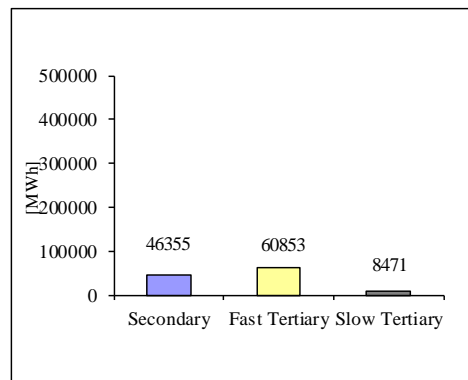
Balancing energy – Selected prices and quantities in August 2017

August 2017

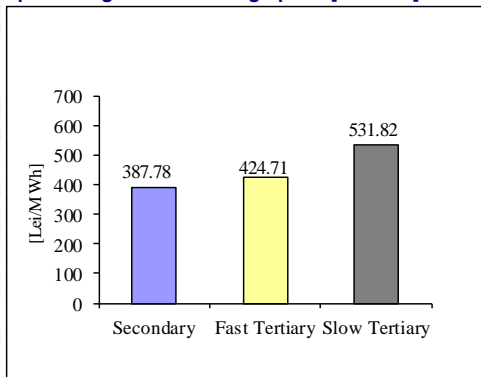
Downward regulation - average price [lei/MWh]



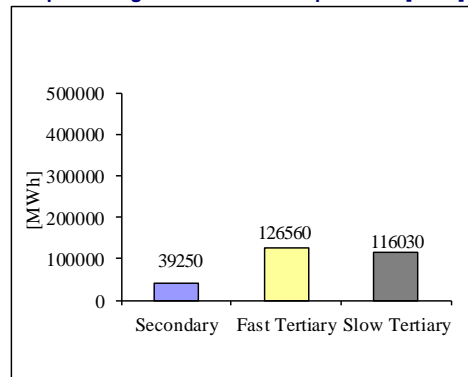
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



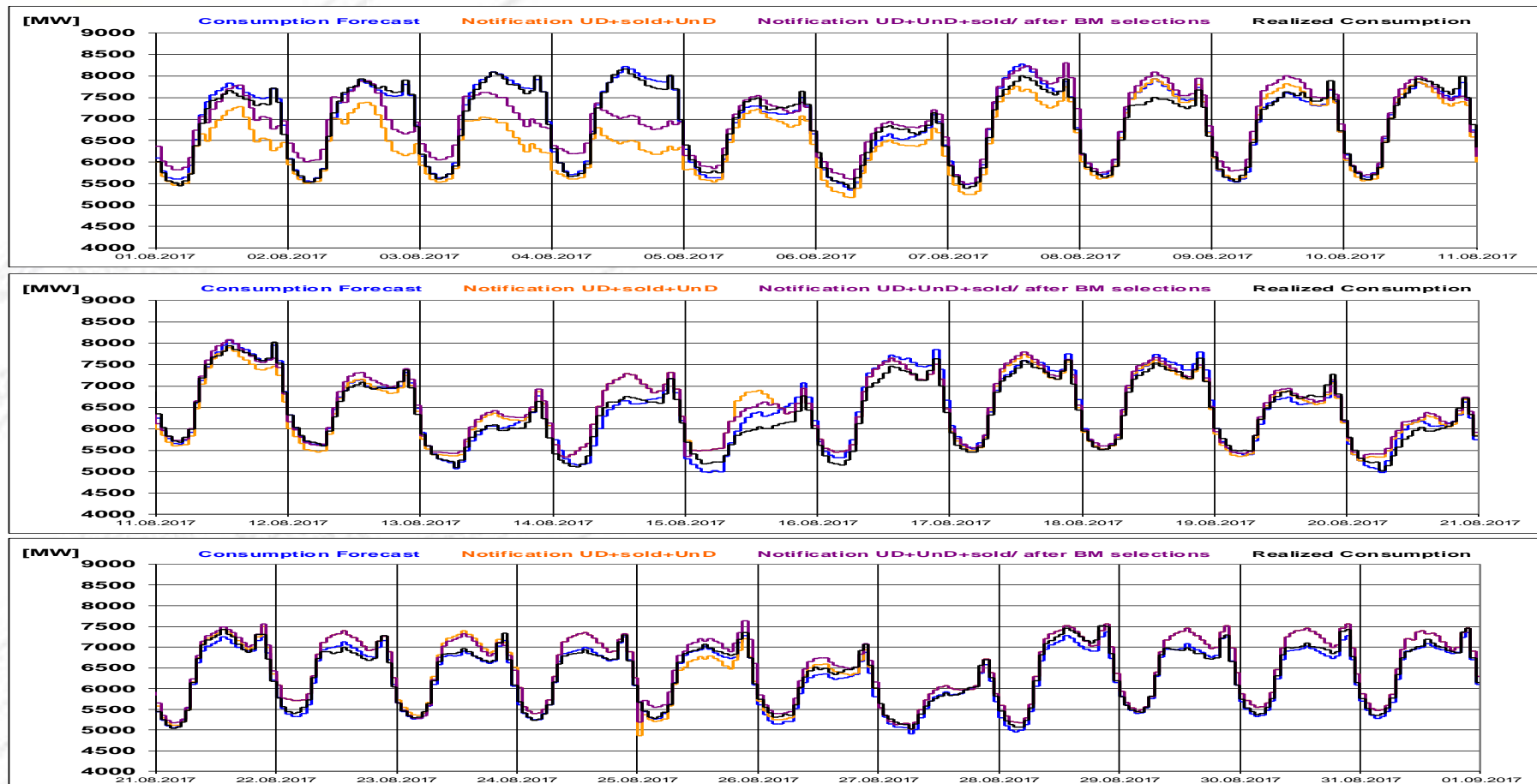


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Realized consumption. forecast. notifications.
notifications after BM selections in D-1



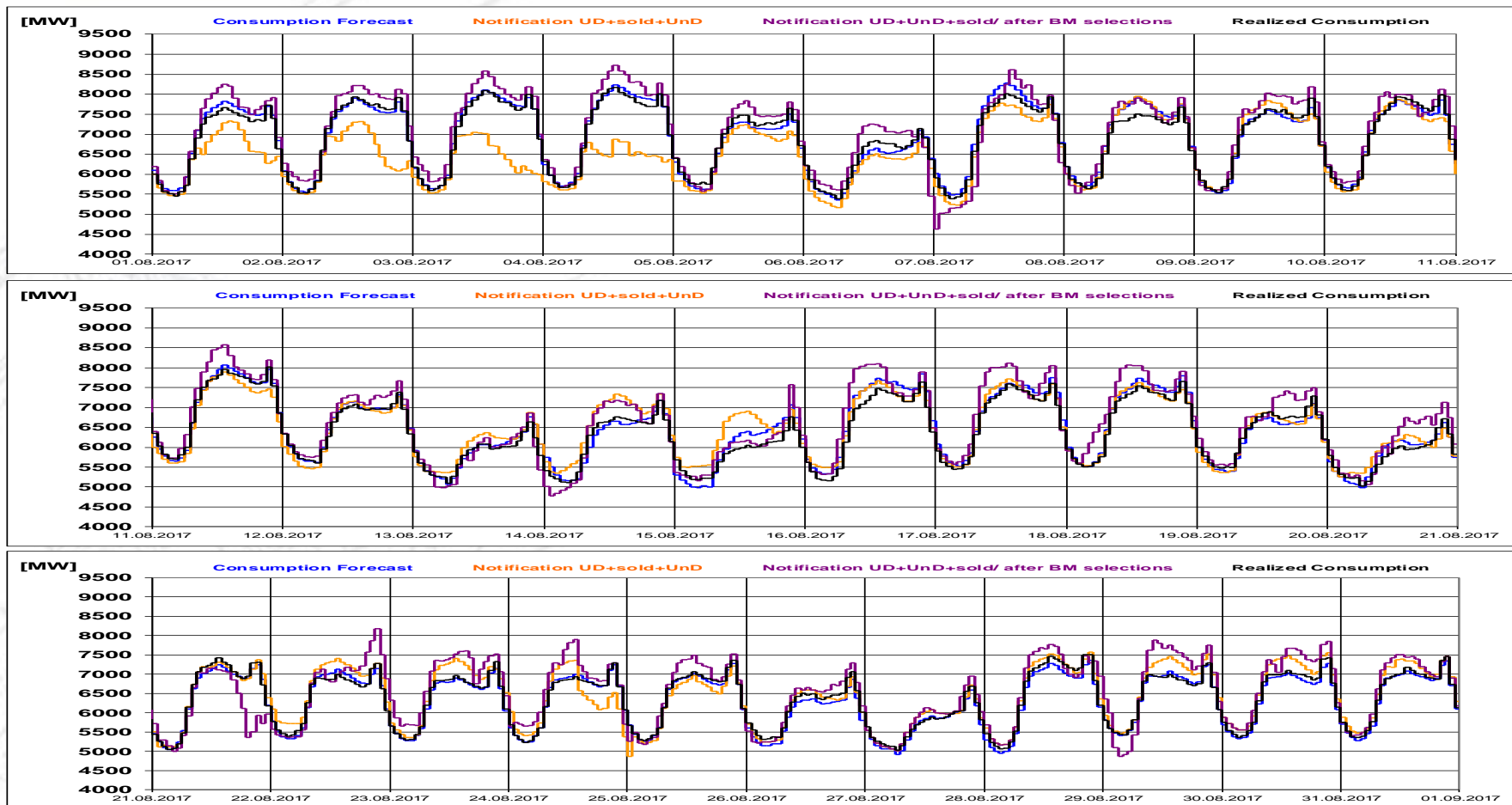


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Balancing Market

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





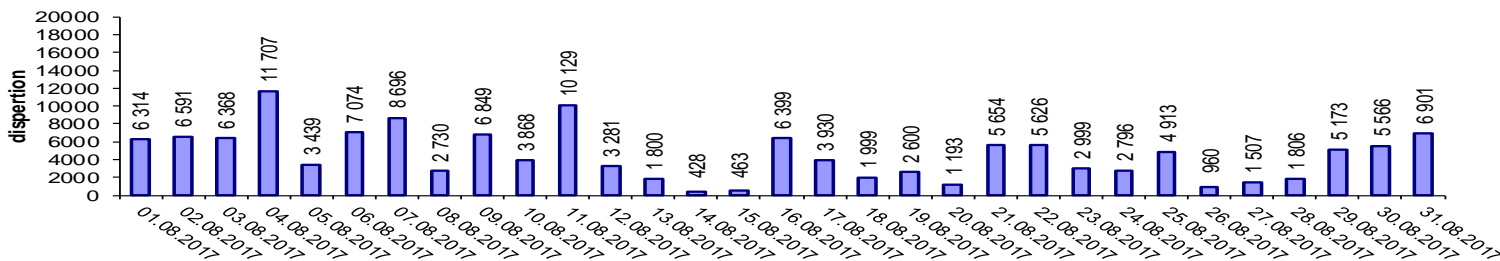
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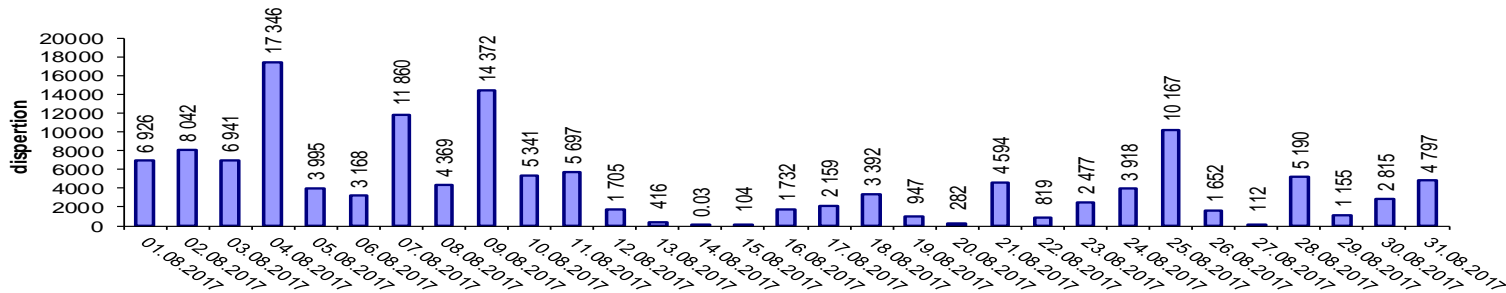
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Indicators – Price Volatility for Secondary Regulation

Price Volatility for Secondary Upward Regulation



Price Volatility for Secondary Downward Regulation



Volatility = price dispersion on studied interval:

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

Public



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