



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

February 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).

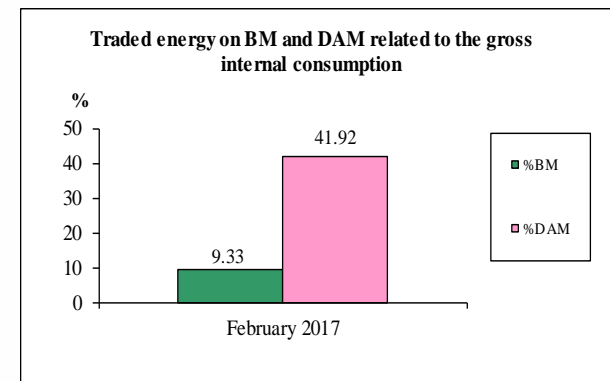
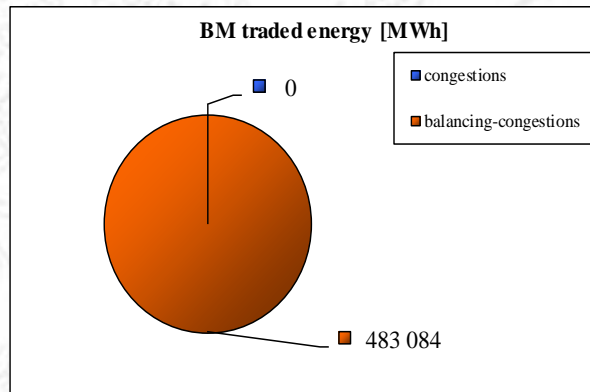


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The Balance Generation/Consumption

- The average monthly value of generated power was 8 128 MW and the actual internal gross consumption was 7 704 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 1,33 %. 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 4,09 %. The greatest daily deviation, regarding the notifications, was registered in 01.02 (13,67 %).
- The energy used in February 2017 for balancing the power system and congestion management was 483 084 MWh (with an average power of 719 MW, which means **9,33 %** from the internal gross consumption).
- The energy traded in February 2017 on Day Ahead Market was 2 170 097 MWh (with an average power of 3 229 MW, which means **41,92 %** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 141 744 073 lei (with an average weighted price of 314 lei/MWh).





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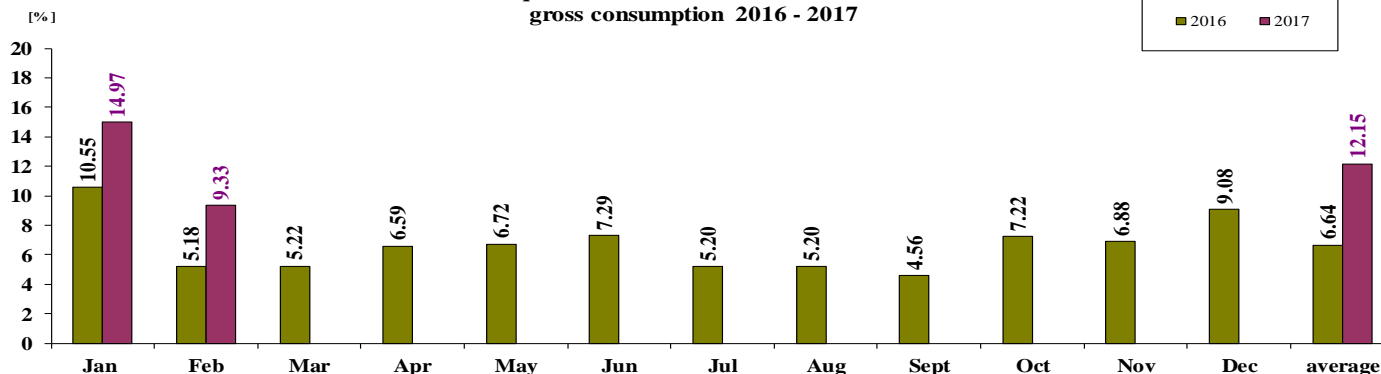
Balancing Market

The Balance Generation / Consumption

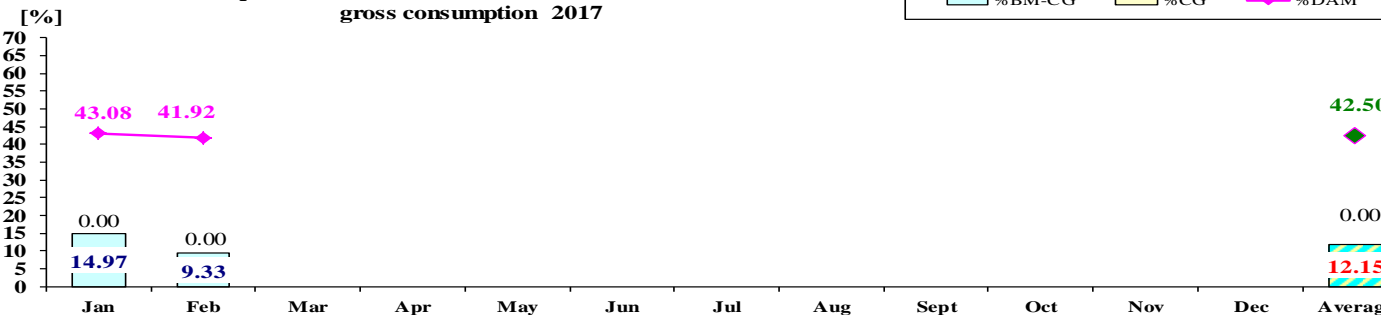
• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption.

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



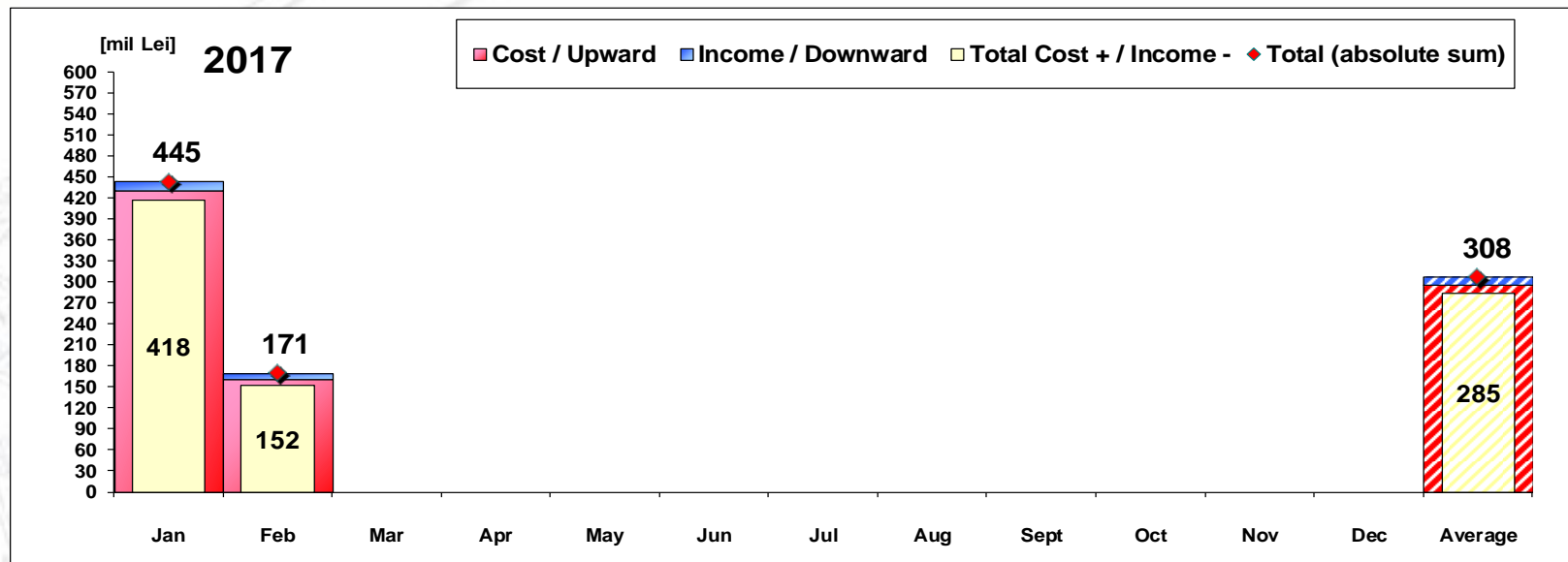
	2017												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	14.97	9.33											12.15
%DAM	43.08	41.92											42.50
%CG	0.00	0.00											0.00
%BM-CG	14.97	9.33											12.15



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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											296 263 336	592 526 672
Income / Downward	13 186 568	9 389 350											11 287 959	22 575 918
CE Cost	0	0											0	0
Total Cost + / Income -	418 206 681	151 744 073											284 975 377	569 950 753
Total (absolute sum)	444 579 817	170 522 773											307 551 295	615 102 590

CE – Congestion Energy

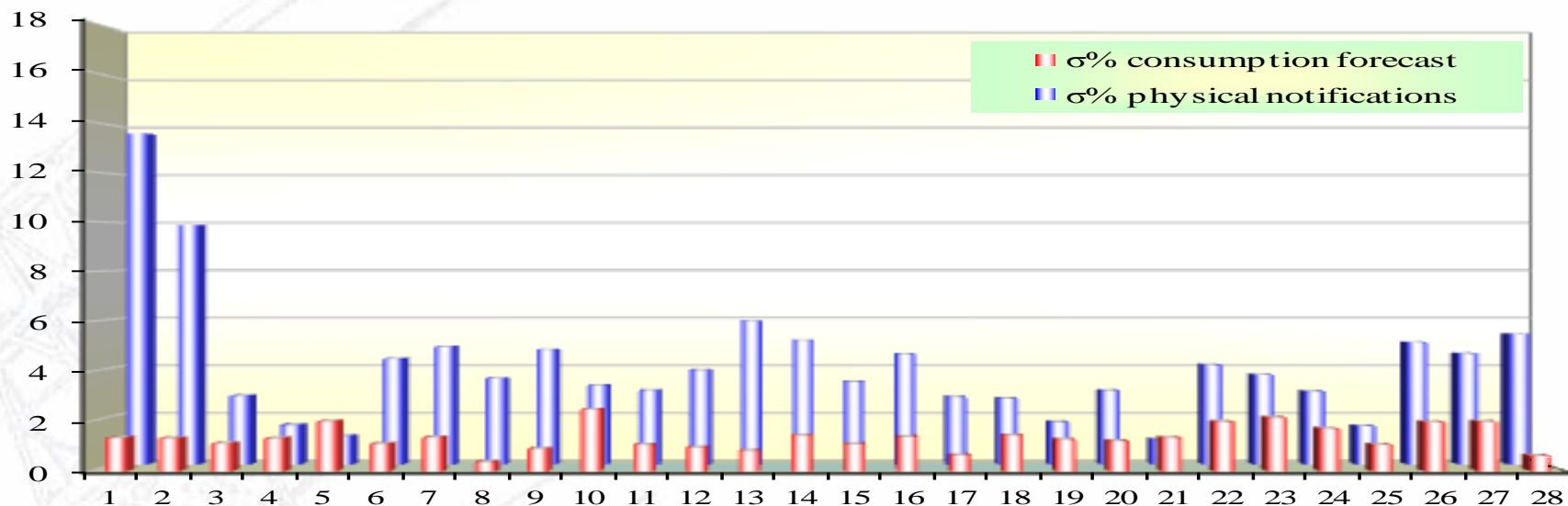
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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



February 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
σ% consumption forecast	1.32	1.32	1.11	1.31	1.99	1.10	1.35	0.36	0.89	2.46	1.06	0.95	0.81	1.42	1.08	1.36	0.63	1.43	1.26	1.20	1.33	1.97	2.14	1.70	1.06	1.97	1.98	0.61
σ% physical notifications	13.67	9.89	2.83	1.63	1.17	4.37	4.86	3.54	4.74	3.26	3.06	3.89	5.91	5.11	3.40	4.55	2.77	2.72	1.74	3.05	1.02	4.11	3.70	3.01	1.58	5.04	4.57	5.39

σ_{average}% consumption forecast = 1.33

σ_{average} % physical notifications = 4.09

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

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

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 94 BRPs, 121 market participants, holding 236 commercially operating dispatchable units. Starting with 01.02.2017 photovoltaic production unit IZVIN (30W-IZVIN-----Q) was registered as dispatchable unit after trial period. URDEL ENERGY SRL (30XROURDEL-----4), registered as provisional BRP according to NRA Order no. 59/2015, was removed from the BRP list. Taking into account the License withdrawal (License no. 1014 and no. 1811 of ARELCO ENERGY SRL and ARELCO POWER SRL) for supply of electricity, BRP ARELCO POWER SRL revoked from Balancing Market starting with 17.02.2017. Taking into account the non-fulfillment of the contractual obligations assumed by Convention no. C140/12.07.2005, BRP PRE TRANSENERGO COM S.A. was revoked from Balancing Market starting with 24.02.2017.

February 2017

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)		
Secondary	69.76	500.00	0.10	47236.00	47236.00	0.00%	5	56.18%	98.54%	56.18%	98.54%	4646	4646
Fast Tertiary	87.75	400.00	0.10	76452.11	67589.14	11.59%	7	56.51%	97.46%	55.07%	98.57%	4132	4128
Slow Tertiary	65.90	400.00	1.00	5136.83	4583.02	10.78%	3	62.38%	100.00%	58.99%	100.00%	5242	5140
				128824.95	119408.17	7.31%							

Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)		(selected)	(actually delivered)	
Secondary	393.95	929.68	250.00	38752.16	38752.16	0.00%	5	58.59%	98.84%	58.59%	98.84%	4763	4763
Fast Tertiary	428.60	775.72	0.10	113928.16	111685.42	1.97%	13	89.58%	95.67%	90.56%	96.40%	8053	8227
Slow Tertiary	451.33	1129.00	165.00	215875.70	213238.54	1.22%	9	39.66%	85.92%	39.21%	85.83%	3041	3033



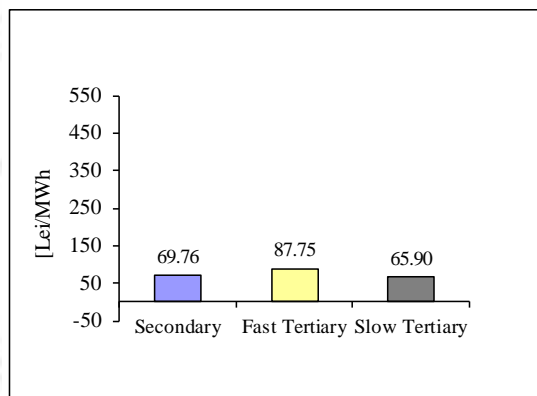
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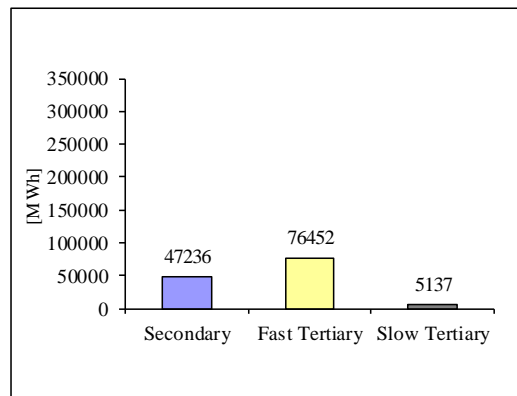
Balancing Market

Balancing energy – Selected prices and quantities in February 2017

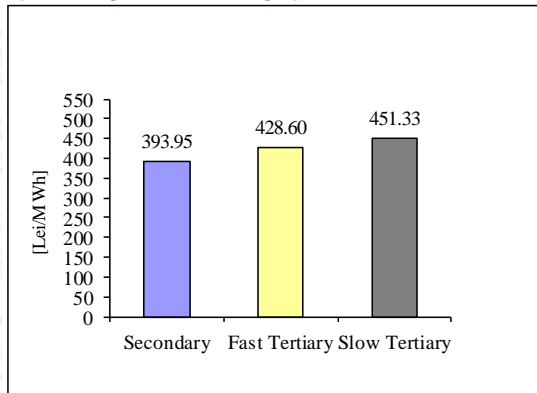
Downward regulation - average price [lei/MWh]



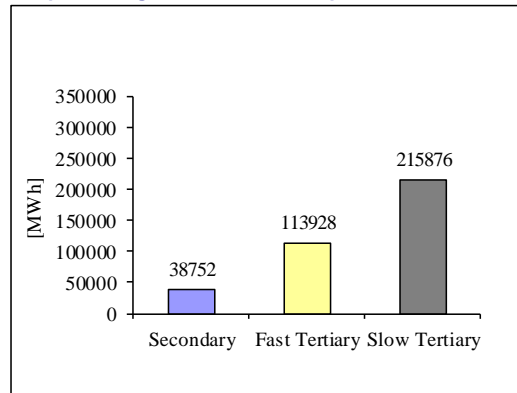
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



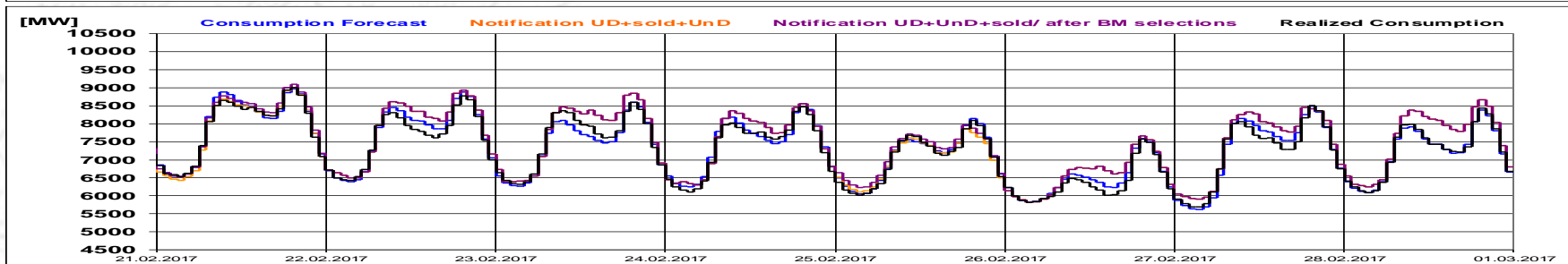
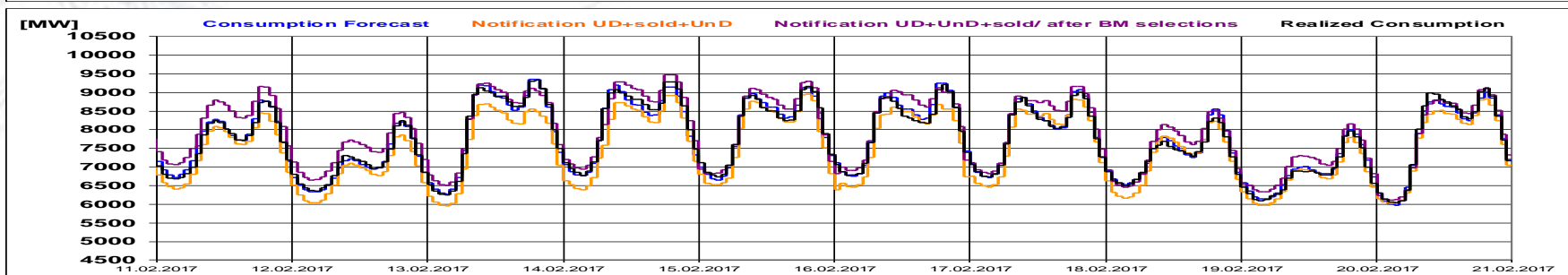
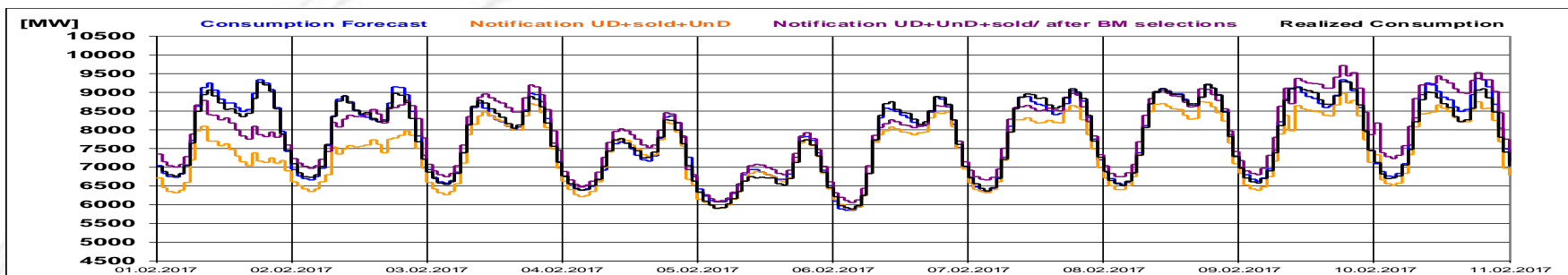


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Realized consumption. forecast. notifications.
notifications after BM selections in D-1



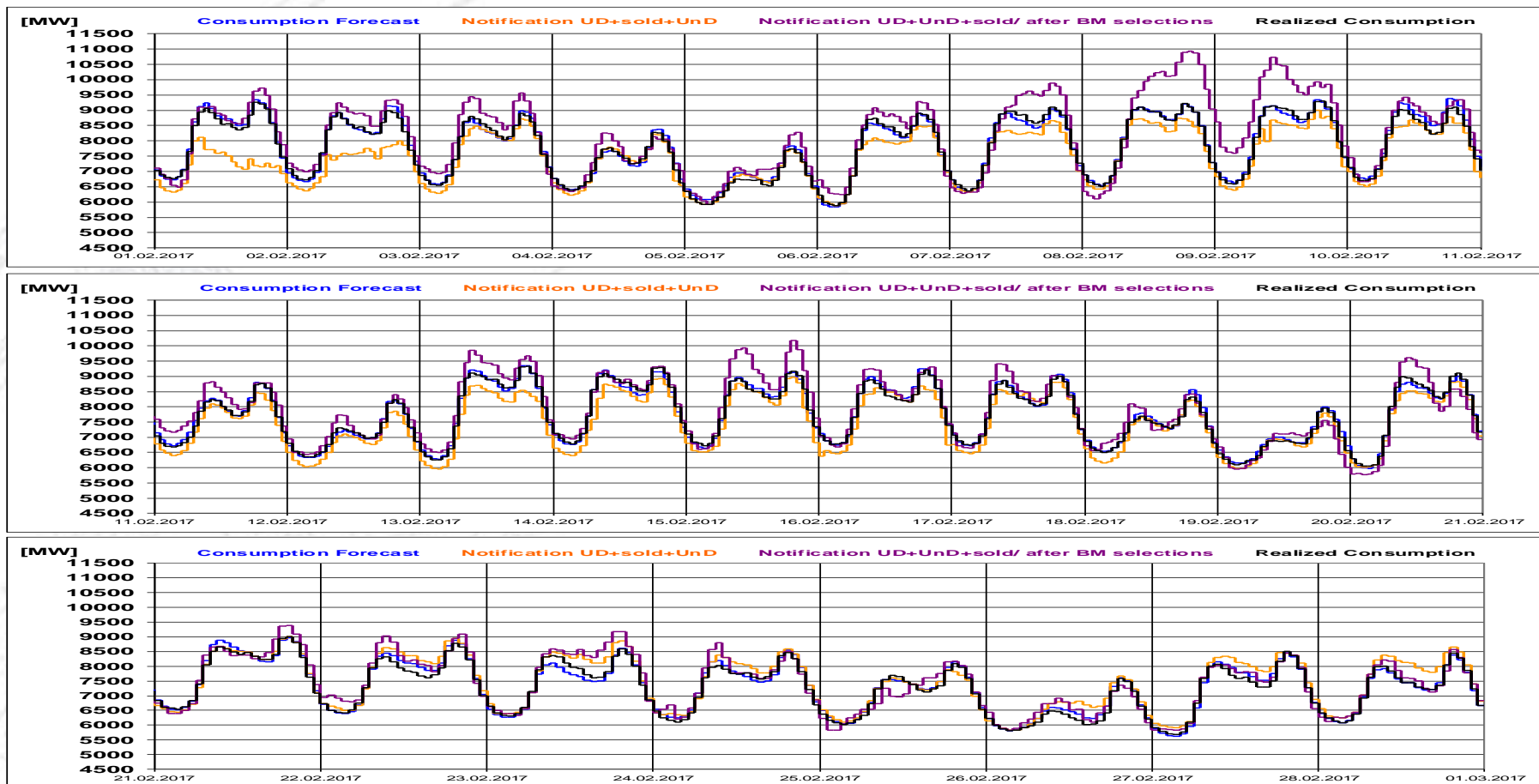


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Balancing Market

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



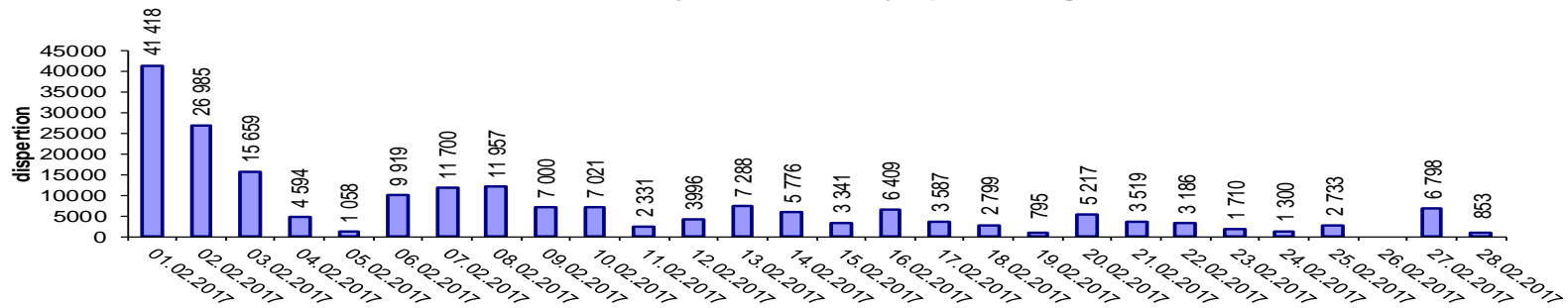


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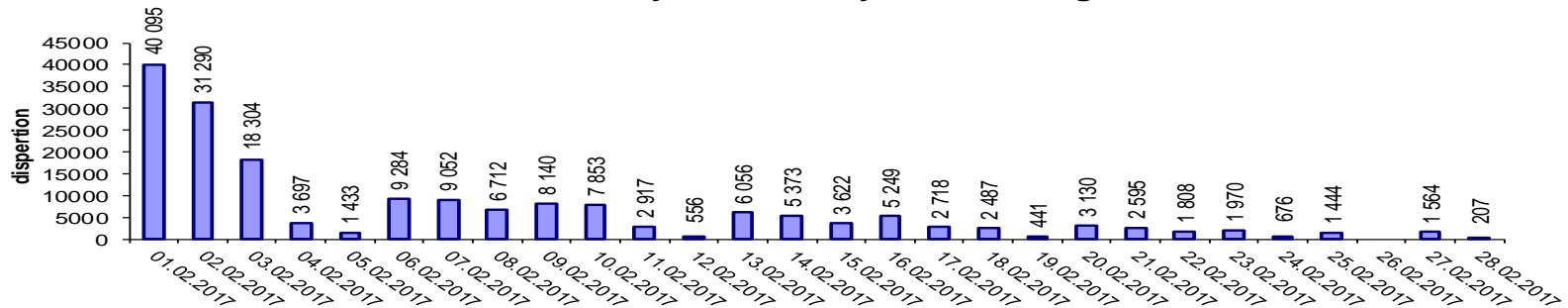
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Indicators – Price Volatility for Secondary Regulation

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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