

# MARKET MONITORING REPORT

## Balancing Market

November 2017

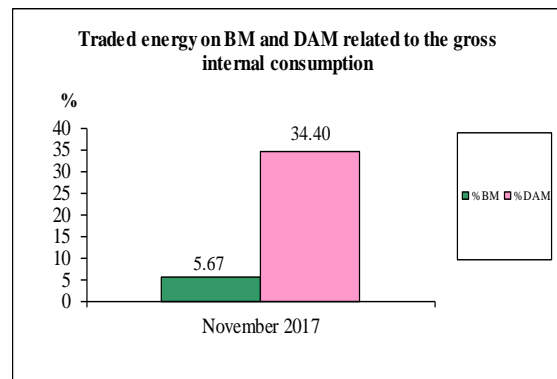
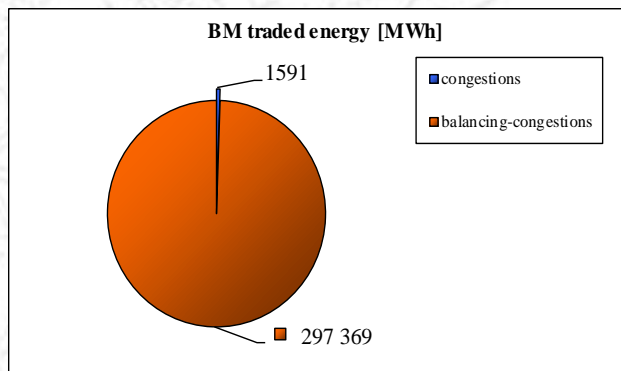
## Abbrevations

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.

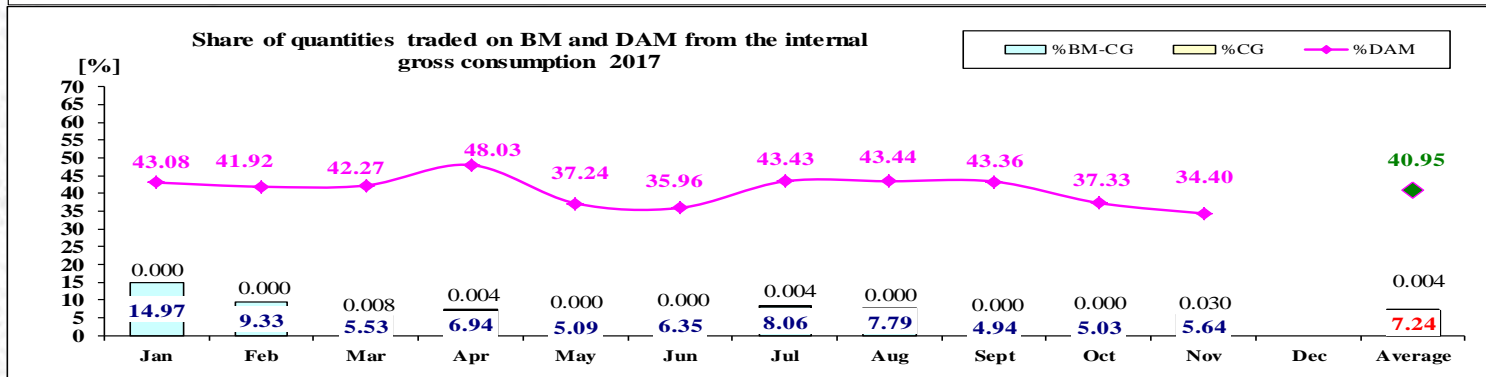
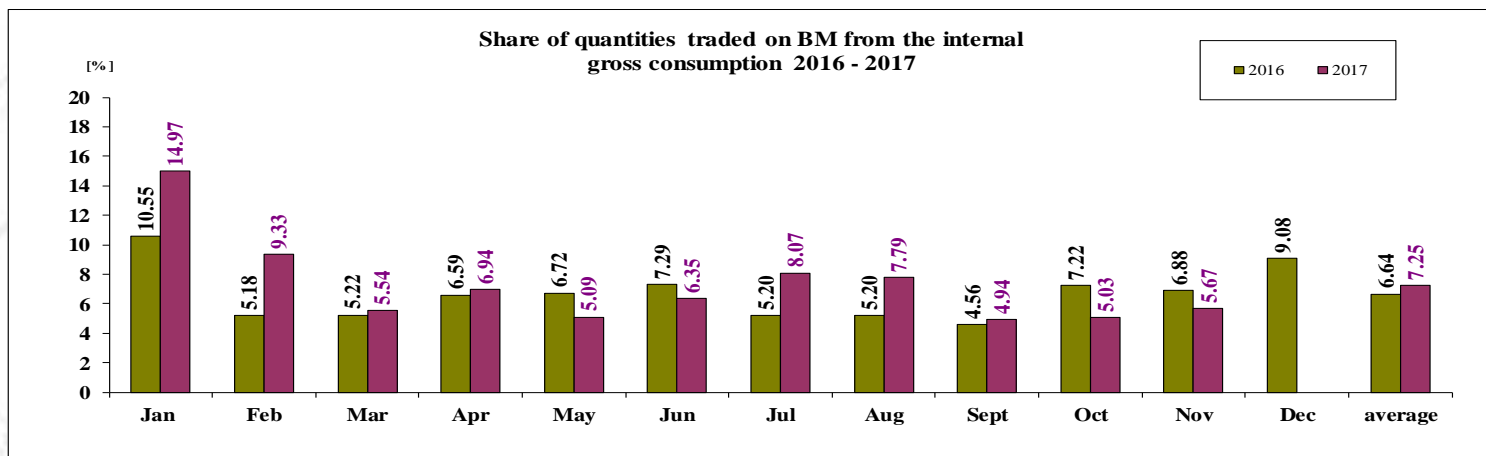
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website **[www.transelectrica.ro](http://www.transelectrica.ro)** (section Transparency).

- The average monthly value of generated power was 7 503 MW and the actual internal gross consumption was 7 329 MW.
- The NDC consumption forecast was close to the actual consumption. the standard deviation being 1,22 %. 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 1,93 %. The greatest daily deviation. regarding the notifications. was registered in 3.11 (3,68 %).
- The energy used in November 2017 for balancing the power system and congestion management was 298 960 MWh (with an average power of 415 MW, which means **5,67** % from the internal gross consumption).
  - the energy used for congestion management was 1 591 MWh (with an average power of 2.21 MW, which means 0,03 % from the internal gross consumption).
- The energy traded in November 2017 on Day Ahead Market was 1 815 008 MWh (with an average power of 2 521 MW, which means **34,40** % from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 77 744 018 lei (with an average weighted price of 260 lei/MWh).
  - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for congestion management was 144 999 lei (with an average weighted price of 91 lei/MWh), which means 0,19 % from the total cost.



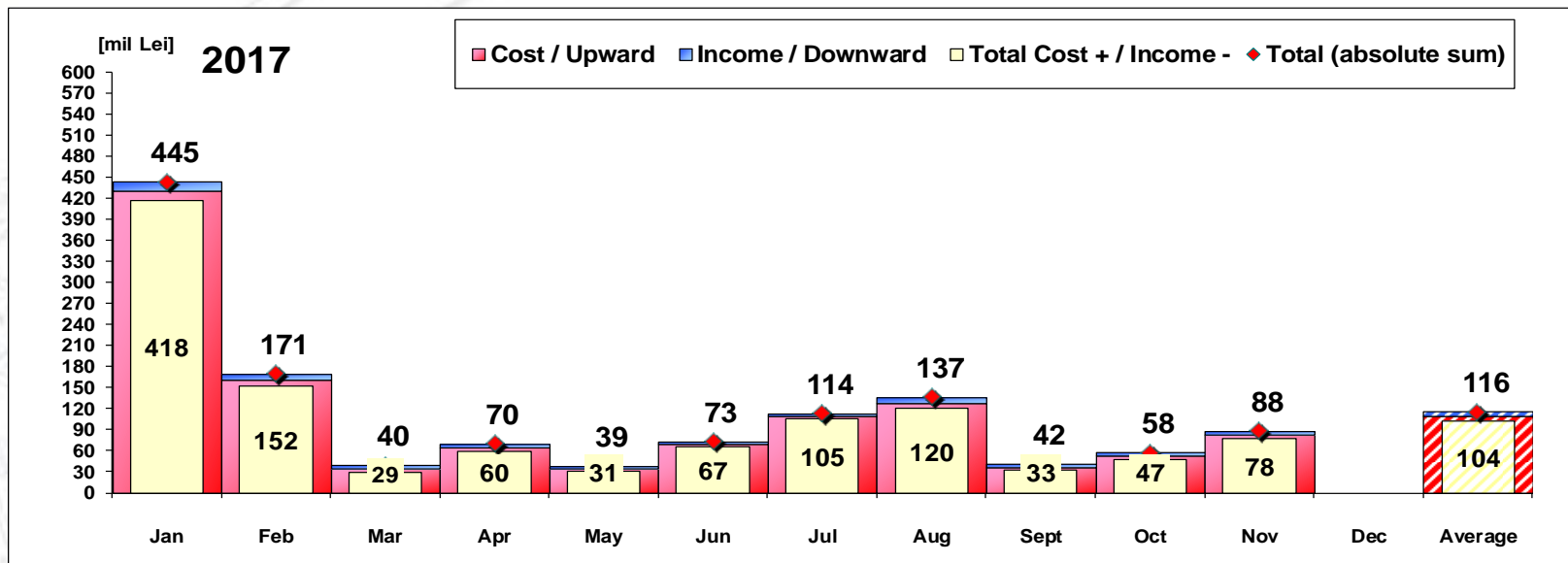
• Monthly percentage values resulted are calculated as ratio between traded volumes on BM and gross internal consumption.

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).



	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	5.67		7.25
%DAM	43.08	41.92	42.27	48.03	37.24	35.96	43.43	43.44	43.36	37.33	34.40		40.95
%CG	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03		0.004
%BM-CG	14.97	9.33	5.53	6.94	5.09	6.35	8.06	7.79	4.94	5.03	5.64		7.24

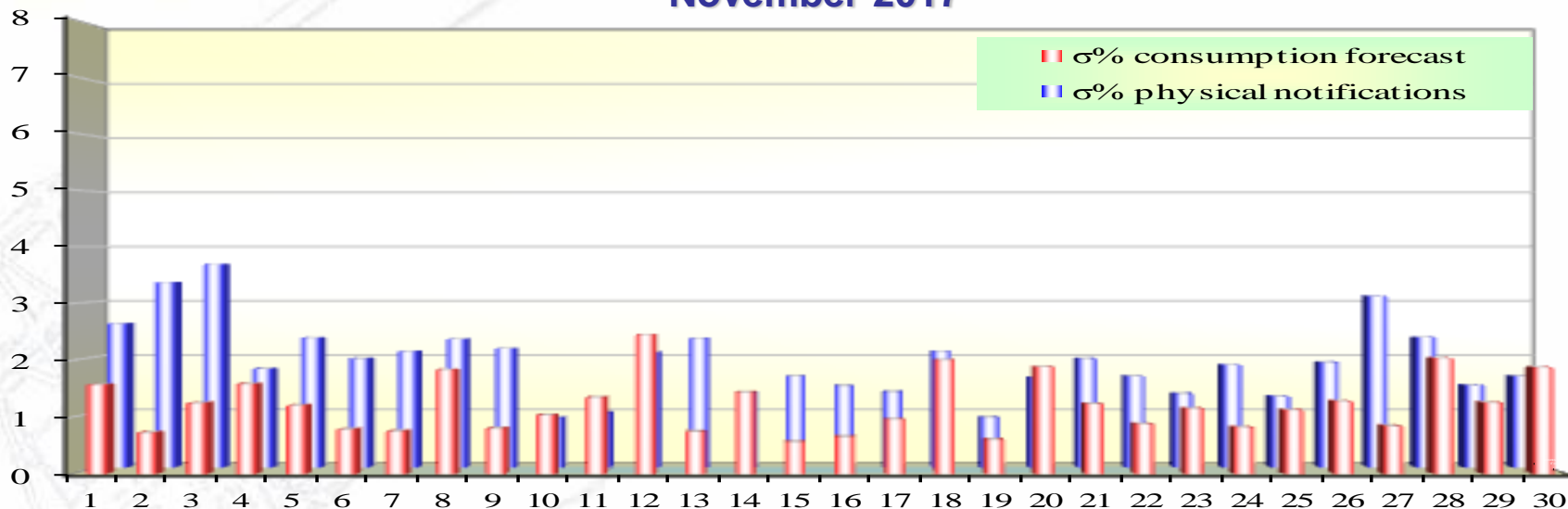
# Balancing Energy Market Transactions



## 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 November 2017



November 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	1.57	0.73	1.25	1.58	1.21	0.78	0.75	1.83	0.80	1.03	1.34	2.45	0.74	1.44	0.56	0.65	0.96	2.01	0.60	1.88	1.23	0.88	1.15	0.82	1.12	1.28	0.84	2.04	1.25	1.87
σ% physical notifications	2.61	3.36	3.68	1.79	2.35	1.97	2.10	2.32	2.15	0.90	0.99	2.09	2.34	1.36	1.65	1.48	1.37	2.10	0.90	1.63	1.97	1.65	1.34	1.86	1.29	1.90	3.11	2.36	1.49	1.65

**σ<sub>average</sub> % consumption forecast = 1.22**

**σ<sub>average</sub> % physical notifications = 1.93**

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

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

**Public**

**R = Realized Consumption;**

**N = Physical Notifications;**

**P = Consumption Forecast.**



- At the beginning of the month on the Balancing Market operated 93 BRPs, 124 market participants, holding 241 commercially operating dispatchable units. Taking into account the non-fulfillment of the contractual obligations, BRP PHOTOVOLTAIC GREEN PROJECT SRL (30XROPGP-----2) was revoked from Balancing Market starting with 20.11.2017.

### November 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)	(actually delivered)	
Secondary	69.76	300.00	0.10	43387.16	43387.16	0.00%	5	54.99%	96.87%	54.99%	96.87%	4426	4426
Fast Tertiary	92.53	400.00	0.10	27230.49	24381.31	10.46%	8	58.33%	95.80%	58.75%	96.71%	4256	4391
Slow Tertiary	70.21	151.00	50.10	226.08	216.38	4.29%	3	70.59%	100.00%	73.12%	100.00%	5603	5849
				70843.73	67984.84	4.04%							

#### Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI
	average			selected	delivered	%	Number	(selected)	(actually delivered)	(selected)	(actually delivered)	(actually delivered)
Secondary	355.87	600.00	250.00	40492.91	40492.91	0.00%	5	54.52%	96.19%	54.52%	96.19%	4370
Fast Tertiary	357.84	596.00	0.10	178374.71	172619.24	3.23%	17	76.73%	90.03%	78.46%	90.14%	6019
Slow Tertiary	366.81	580.00	0.10	18131.63	17863.19	1.48%	12	53.15%	91.21%	53.76%	92.06%	3784

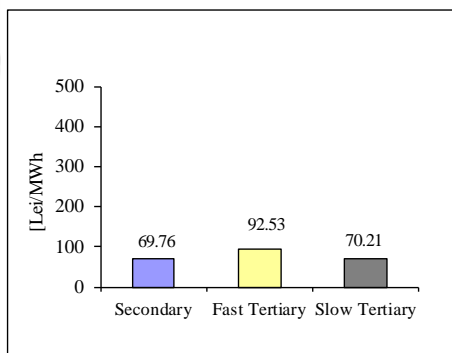


# Balancing Market

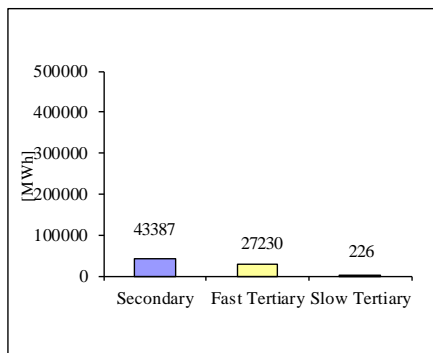
## Balancing energy – Selected prices and quantities in November 2017

November 2017

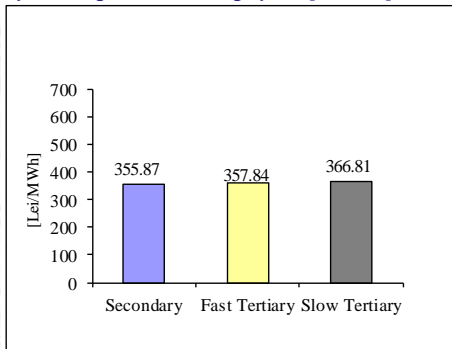
Downward regulation - average price [lei/MWh]



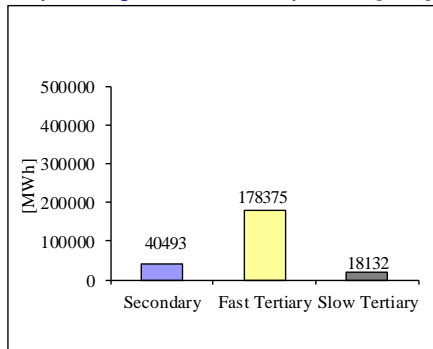
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]

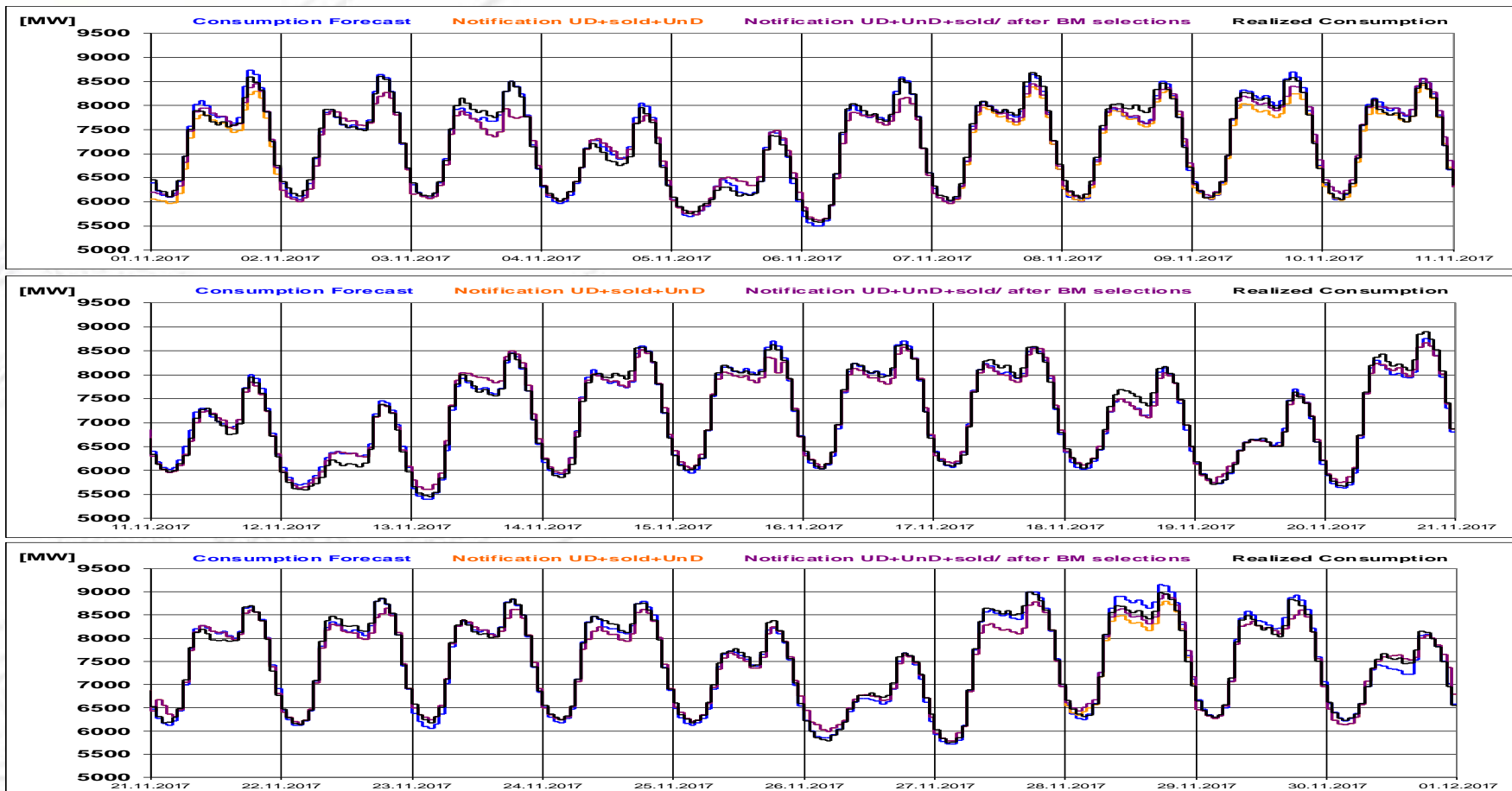


Upward regulation - selected quantities [MWh]



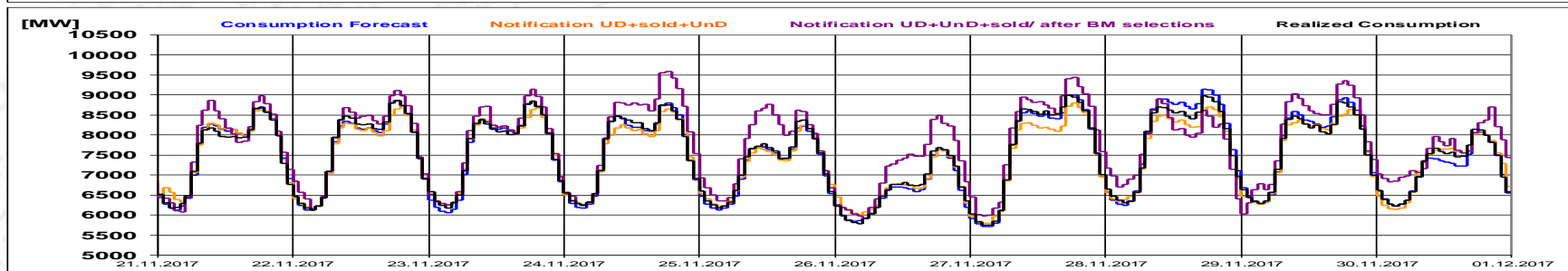
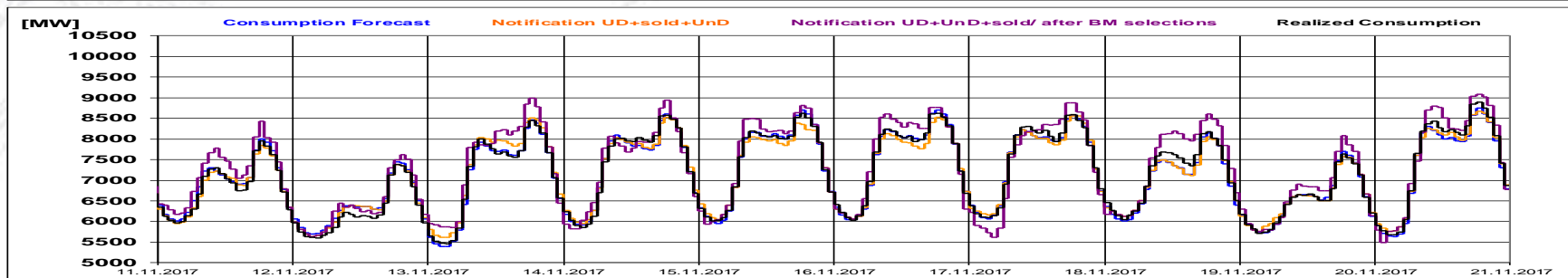
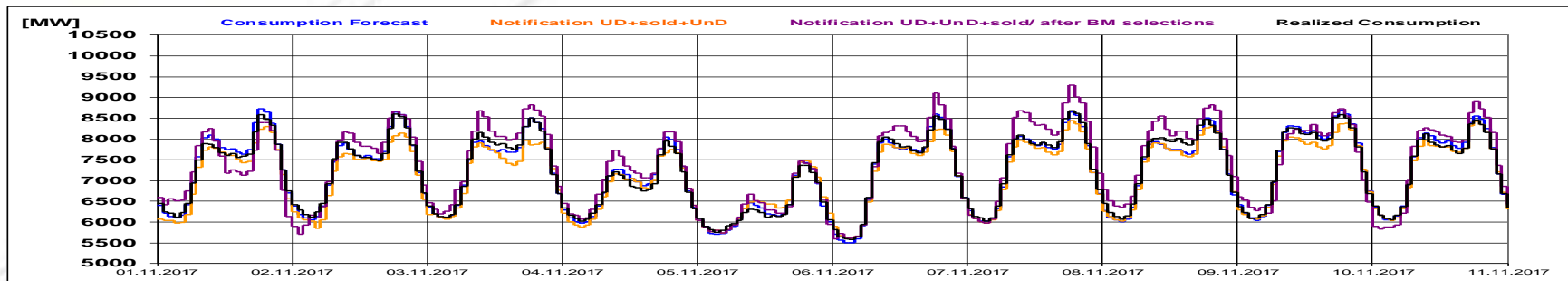
# Balancing Market

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



# Balancing Market

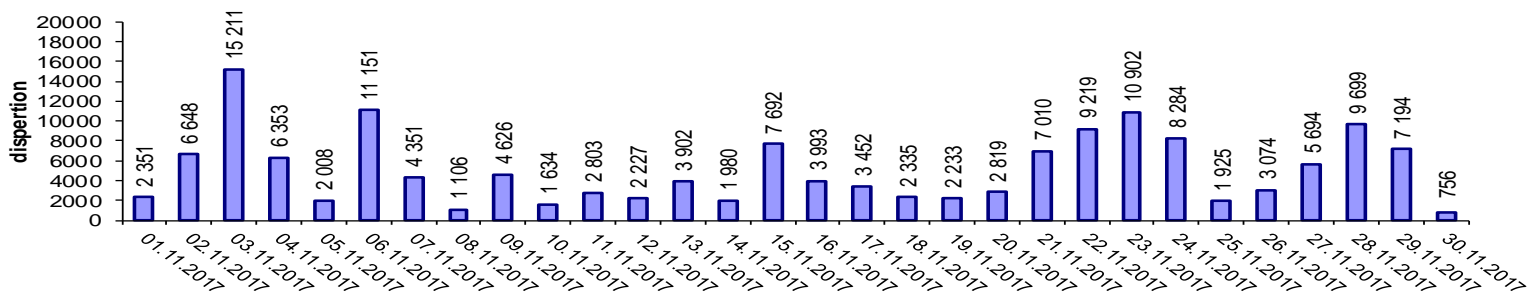
Realized consumption. forecast. notifications.  
notifications after BM selections in D  
(end of delivery day)



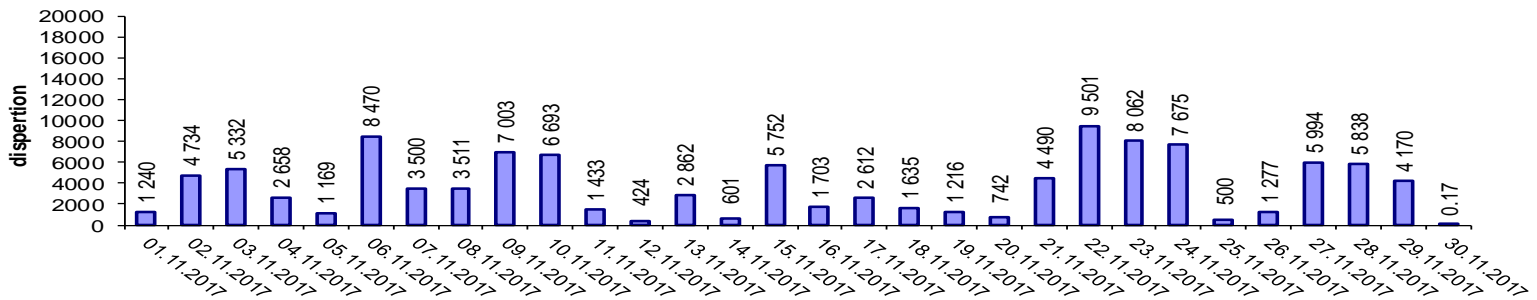
# Balancing Market

## Indicators – Price Volatility for Secondary Regulation

Price Volatility for Secondary Upward Regulation



Price Volatility for Secondary Downward Regulation



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

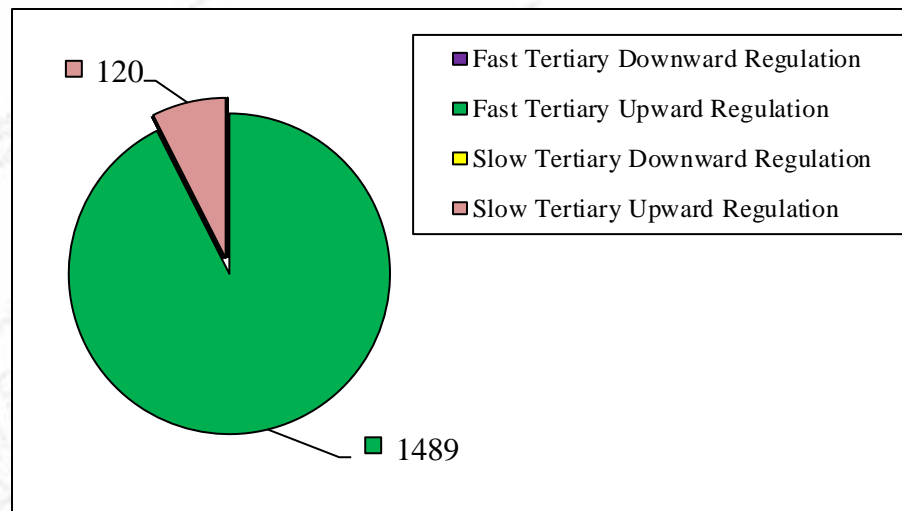
$$\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$

Public

# Balancing Market

## Congestion Management

	Quantities [MWh]			Participants
	<i>Selected</i>	<i>Delivered</i>	<i>Deviation[%]</i>	<i>Number</i>
Fast Tertiary Downward Regulation	-	-	-	-
Fast Tertiary Upward Regulation	1489.33	1471.42	1.20%	2
Slow Tertiary Downward Regulation	-	-	-	-
Slow Tertiary Upward Regulation	120.00	120.00	0.00%	1
	1609.33	1591.42	1.11%	



Note: The value of delivered energy for congestion management is the result of the algorithm used to determine the costs for balancing the power system and internal congestion management.

# Contact persons

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