



**Transelectrica®**  
Societate Administrată în Sistem Dualist

# **MARKET MONITORING REPORT**

## **Balancing Market**

### **November 2021**

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).



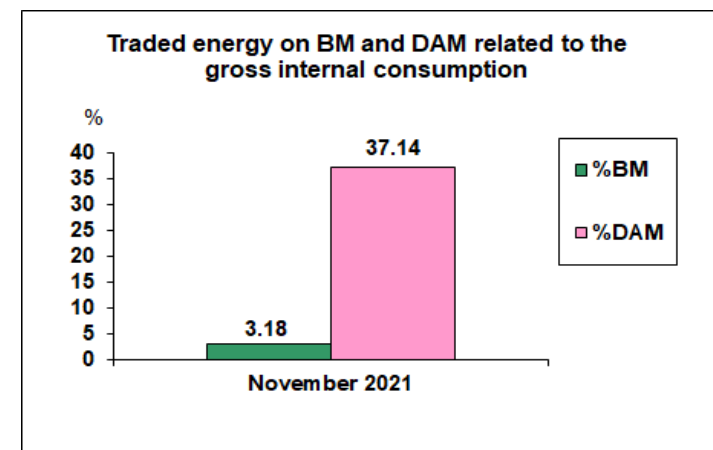
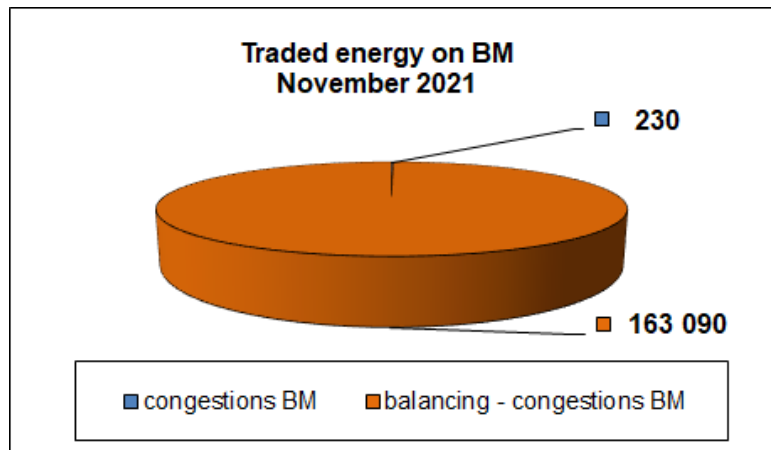
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# Balancing Market

## The Balance Generation/Consumption

- The average monthly value of generated power was 6 419 MW and the actual internal gross consumption was 7 141 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.70%**. 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 **2.30%**. The greatest daily deviation regarding the notifications was registered on 29<sup>th</sup> of November 2021 (**3,89%**).
- The energy used in November 2021 for balancing the power system and congestion management was 163 320 MWh (with an average power of 227 MW, which means **3,18%** from the internal gross consumption). The energy used for congestion management was 229,56 MWh (with an average power of 0.32 MW, which means 0.0045% from the internal gross consumption).
- There were no transactions outside BM (with financial compensation).
- The energy used in November 2021 on Day Ahead Market was 1 909 758 MWh (with an average power of 2 652 MW, which means **37.14%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 173 729 452 lei (with an average weighted price of 1 063.74 lei/MWh. The cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for congestion management was 81 088 lei.





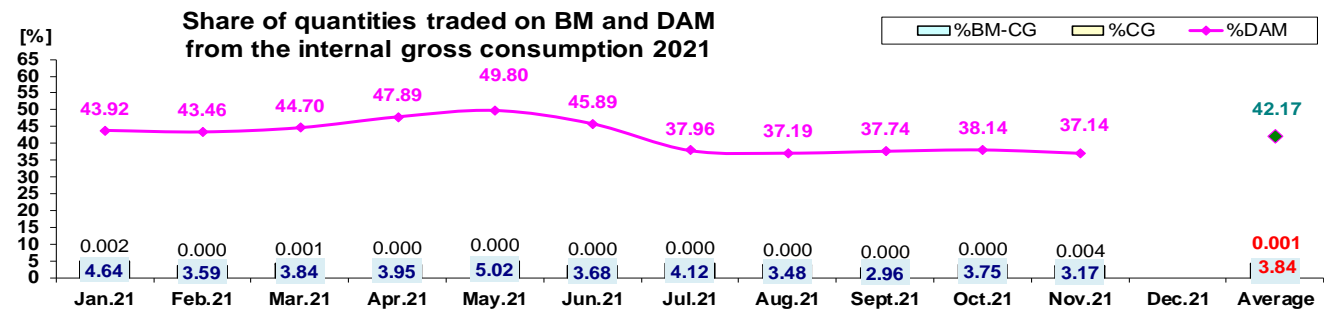
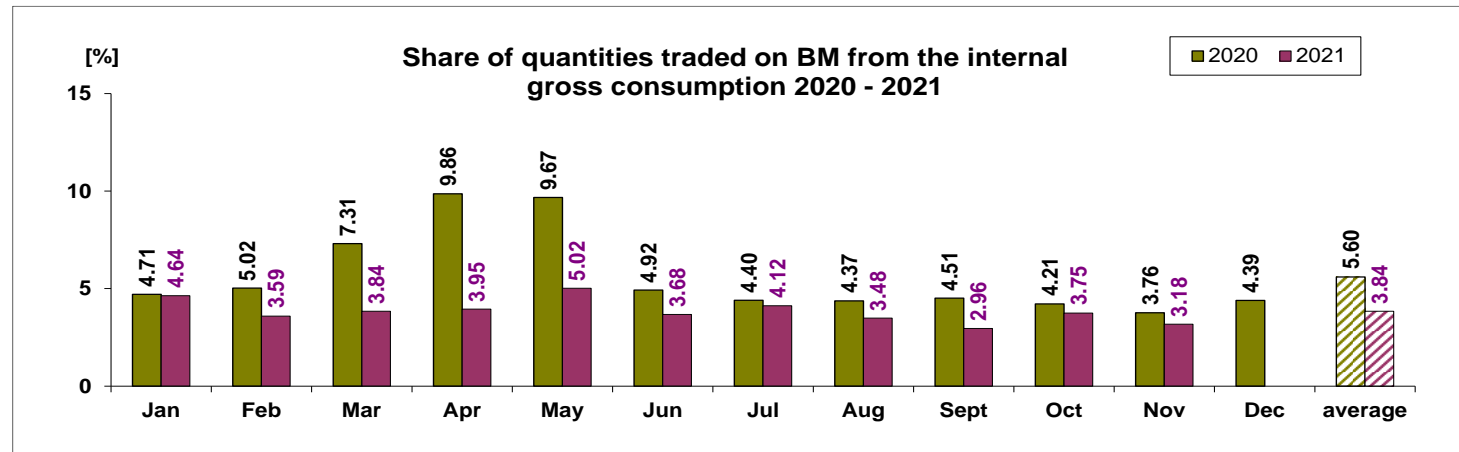
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# Balancing Market

## The Balance Generation / Consumption

• Monthly percentage values resulted are calculated as ratio between traded volumes on BM / outside BM with financial compensation 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).



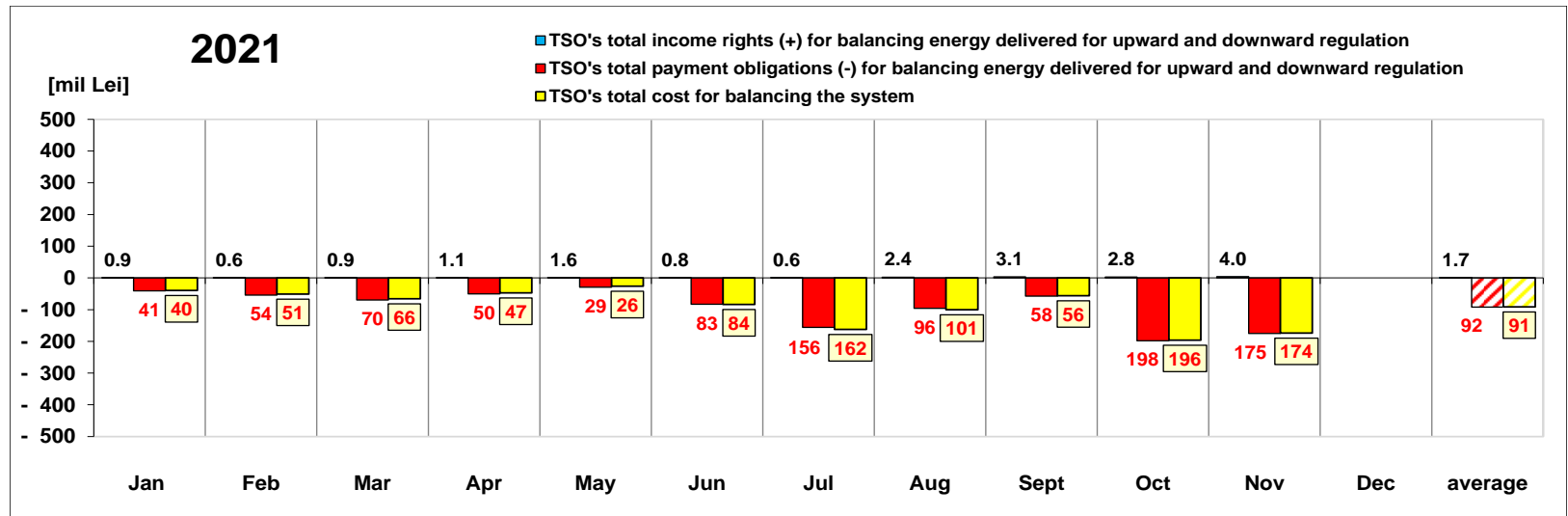
	2021												
	Jan.21	Feb.21	Mar.21	Apr.21	May.21	Jun.21	Jul.21	Aug.21	Sept.21	Oct.21	Nov.21	Dec.21	Average
%BM	4.64	3.59	3.84	3.95	5.02	3.68	4.12	3.48	2.96	3.75	3.18		3.84
%DAM	43.92	43.46	44.70	47.89	49.80	45.89	37.96	37.19	37.74	38.14	37.14		42.17
%CG	0.002	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004		0.0007
%BM-CG	4.636	3.592	3.836	3.947	5.019	3.675	4.122	3.485	2.961	3.748	3.172		3.836
% outside BM	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00



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# Balancing Energy Market Transactions



[Lei]		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	average	Sum
TSO's income rights / payment obligations for balancing energy delivered for downward regulation	incomes (+) prices ≥ 0	878 222	633 581	912 692	1 127 724	1 558 592	805 841	648 010	2 432 702	3 133 558	2 819 066	4 020 754		1 724 613	18 970 743
	payments (-) prices < 0	- 367 742	- 8 158	- 280 354	- 849 859	0	- 295 584	- 340 681	- 65 874	- 7 763	- 660	- 41 713		- 205 308	- 2 258 388
TSO's payment obligations / income rights for balancing energy delivered for upward regulation	payments (-) prices ≥ 0	-40 134 420	-54 045 144	-69 270 145	-49 547 577	-29 085 259	-82 840 786	-155 567 405	-95 476 521	-57 690 962	-198 267 624	-174 947 245		-91 533 917	-1 006 873 088
	incomes (+) prices < 0	0	0	0	0	0	0	0	0	0	0	0		0	0
TSO's total income rights (+) for balancing		878 222	633 581	912 692	1 127 724	1 558 592	805 841	648 010	2 432 702	3 133 558	2 819 066	4 020 754		1 724 613	18 970 743
TSO's total payment obligations (-) for		-40 502 162	-54 053 301	-69 550 500	-50 397 436	-29 085 259	-83 136 370	-155 908 086	-95 542 395	-57 698 725	-198 268 284	-174 988 958		-91 739 225	-1 009 131 476
TSO's total cost for balancing the system		-39 649 686	-50 861 284	-65 692 590	-47 412 381	-26 133 778	-83 889 171	-162 448 175	-100 539 890	-55 923 174	-196 277 620	-173 729 452		-91 141 564	-1 002 557 201
Value of transactions outside BM (with		- 25 803	0	0	0	0	0	0	0	0	0	0		- 2 346	- 25 803
Congestion Cost on BM		- 56	0	- 121	0	0	0	0	- 178	0	0	- 81 088		- 7 404	- 81 443
Congestion Cost outside BM		0	0	0	0	0	0	0	0	0	0	0		0	0

\* The annual average value was obtained as arithmetic average of the monthly values.

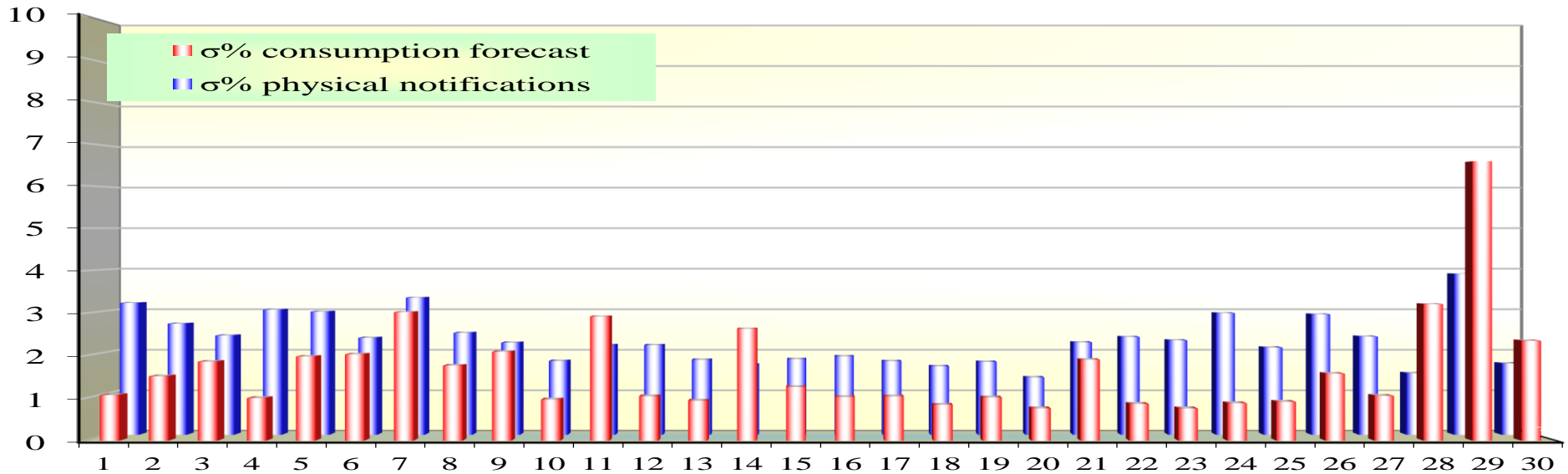


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# Balancing Market

Standard deviation of physical notifications and consumption forecast against the actual consumption in November 2021



Nov 2021

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	1.07	1.52	1.86	1.00	1.98	2.03	3.03	1.77	2.09	0.97	2.92	1.04	0.94	2.63	1.26	1.03	1.04	0.84	1.02	0.76	1.90	0.86	0.76	0.88	0.91	1.58	1.05	3.21	6.58	2.35
σ% physical notifications	3.19	2.69	2.40	3.03	2.98	2.35	3.32	2.47	2.23	1.78	2.17	2.17	1.81	1.69	1.83	1.90	1.78	1.66	1.76	1.38	2.23	2.37	2.28	2.94	2.11	2.92	2.38	1.49	3.89	1.72

σ<sub>average% consumption forecast</sub> = 1.70

σ<sub>average % physical notifications</sub> = 2.30

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

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

**R = Realized Consumption;**

**N = Physical Notifications;**

**P = Consumption Forecast.**

Public

# Balancing Market

## Balancing energy – Selected prices and quantities

- At the beginning of the month on the Balancing Market operated 69 BRPs, 101 market participants, holding 193 commercially operating dispatchable units.

### November 2021

#### Downward Regulation

November 2021

Downward Regulation	Prices			Quantities			Participants						
	Weighted				Actually								
	Average	Maximum	Minimum	Selected	Delivered	Deviation		C1	C3	C1	C3	HHI	HHI
													(actually
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	-0.14	0.10	-10.00	41285.86	41285.86	0.00%	4	67.56%	99.97%	67.56%	99.97%	5177	5177
Fast Tertiary	158.21	250.00	0.40	26719.78	24985.27	6.49%	8	70.08%	96.69%	71.45%	97.08%	5539	5681
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				68005.64	66271.13	2.55%							

#### Upward Regulation

	Prices			Quantities			Participants						
	Weighted Average	Maximum	Minimum	Selected	Actually Delivered	Deviation	C1		C3		HHI	HHI	
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	2020.95	2500.00	2000.00	40988.72	40988.72	0.00%	4	68.75%	100%	68.75%	100%	5307	5307
Fast Tertiary	1644.03	2440.00	697.00	57221.45	56059.82	2.03%	9	78.41%	88.31%	78.61%	88.62%	6225	6257
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				98210.17	97048.55	1.18%							





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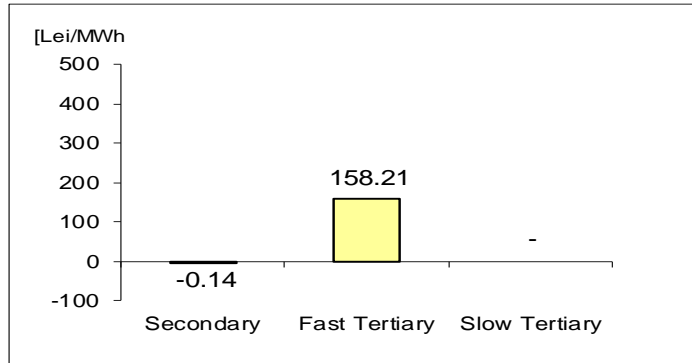
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# Balancing Market

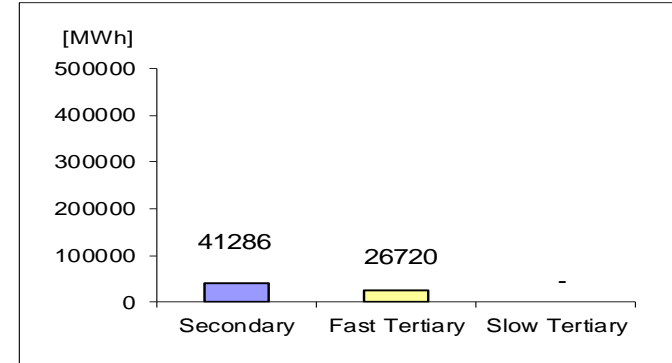
## Balancing energy – Selected prices and quantities in November 2021

**November 2021**

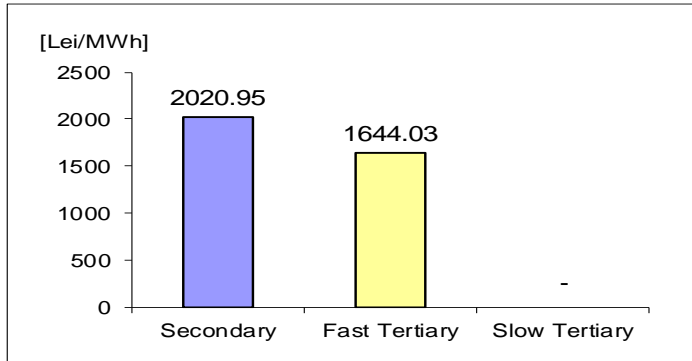
**Downward regulation - average price [lei/MWh]**



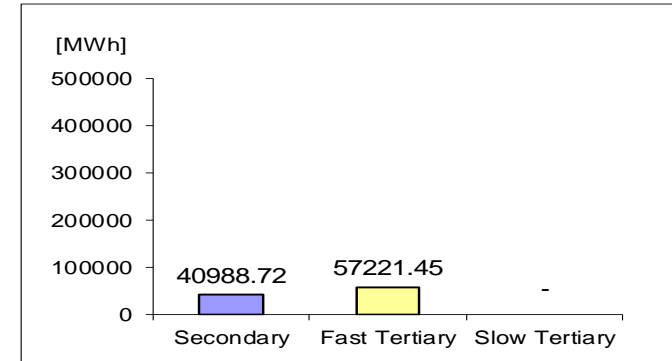
**Downward regulation - selected quantities**



**Upward regulation - average price [lei/MWh]**



**Upward regulation - selected quantities**



$$\text{Price}_{\text{average weighted, regulation type, direction}} = \frac{\sum (Q_{i,j} * P_{i,j})}{\sum Q_{i,j}}$$

where  $Q_{i,j}$ ,  $P_{i,j}$  represents the quantity, respectively the price of the energy selected, corresponding to the selected transaction  $j$  in the dispatching interval  $i$ .

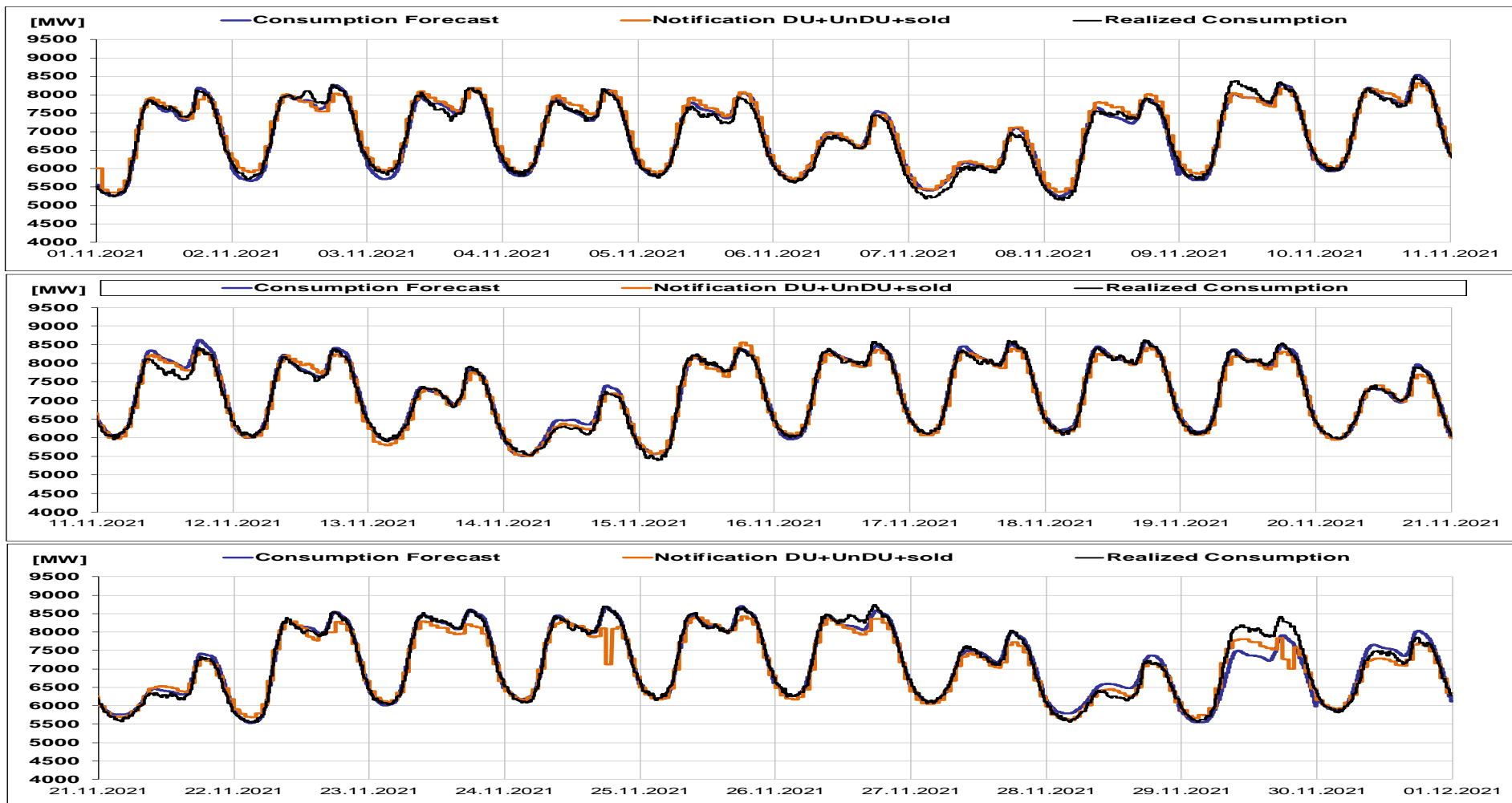


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# Balancing Market

## Realized consumption, forecast, notifications in D-1



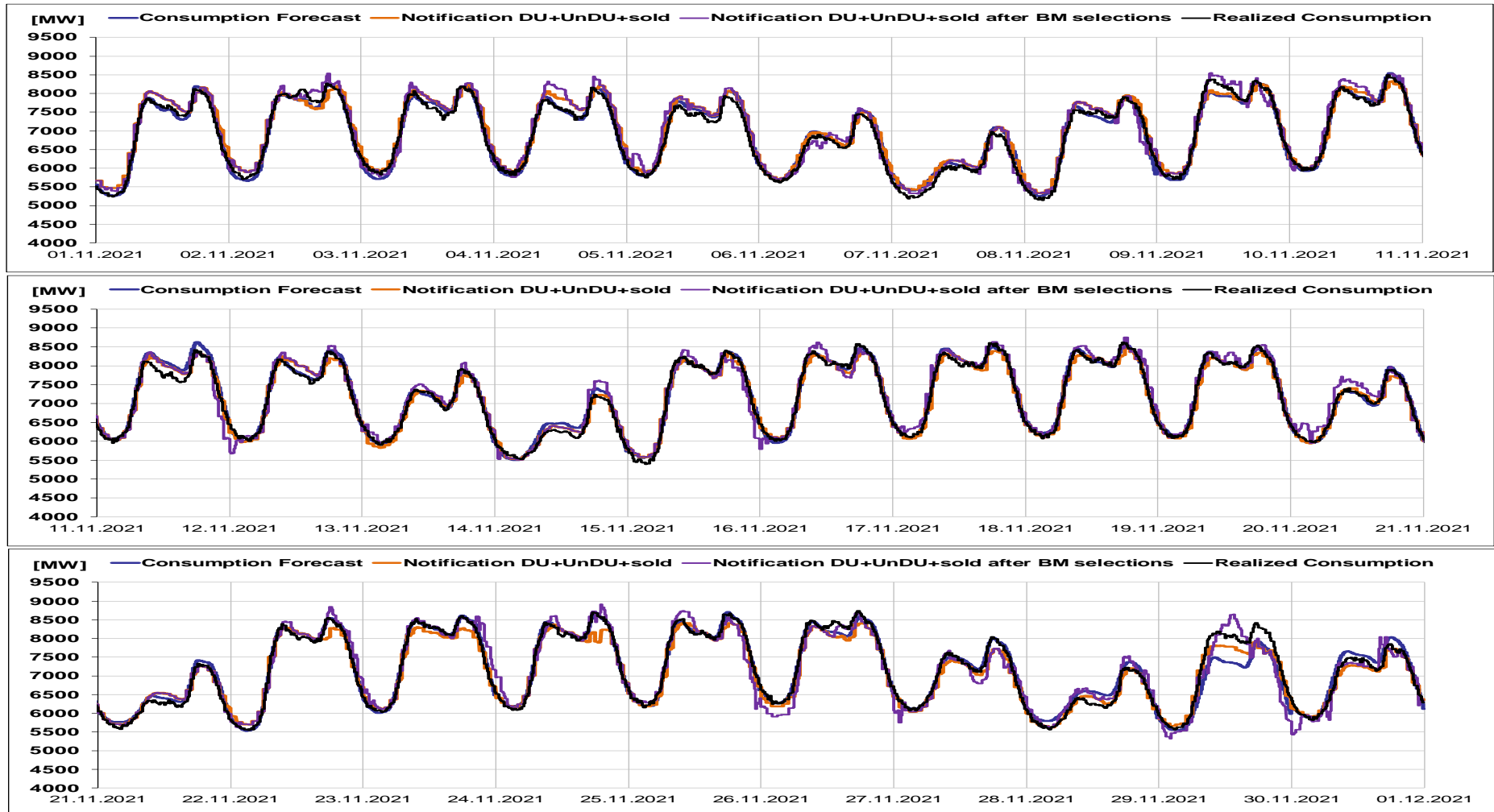


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# Balancing Market

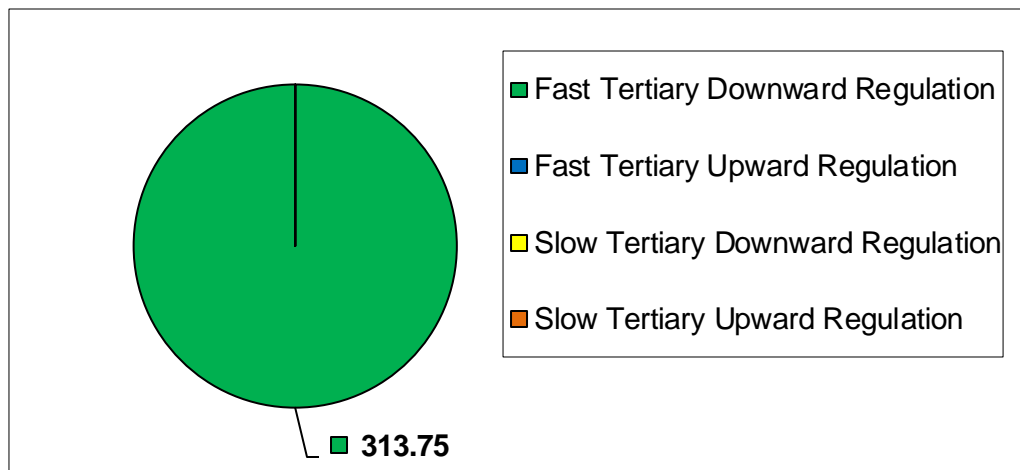
Realized consumption, forecast, notifications, notifications after BM selections in D (end of delivery day)



November 2021

	Quantities [MWh]		Participants
	Selected [MWh]	Actually Delivered	Number
Fast Tertiary Downward Regulation	313.75	229.56	3
Fast Tertiary Upward Regulation	0.00	-	0
Slow Tertiary Downward Regulation	0.00	-	0
Slow Tertiary Upward Regulation	0.00	-	0
	313.75	229.56	

### Selected energy [MWh]



The value of the delivered energy related to the final transactions for the management of internal congestions is the one resulting from the application of the algorithm for determining the costs for system balancing and for management of internal congestions from the settlement stage on the BM.



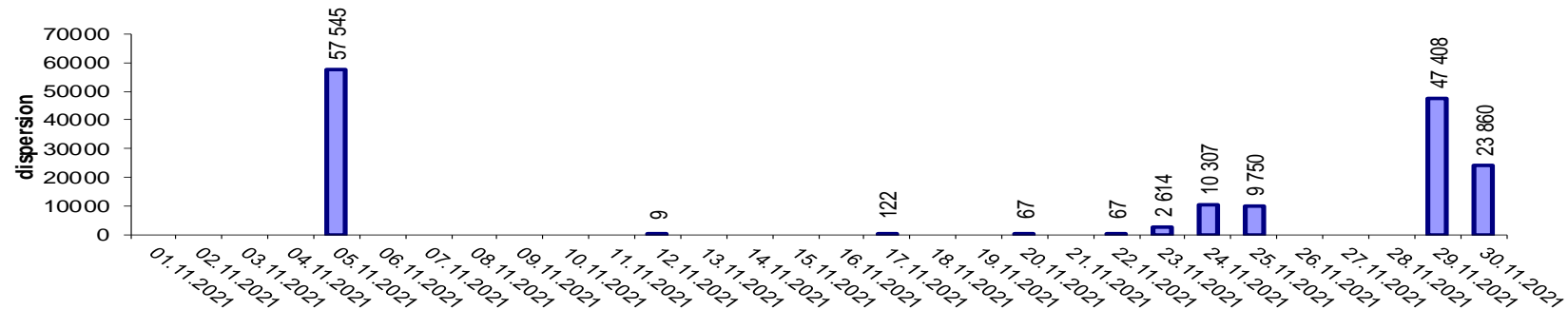
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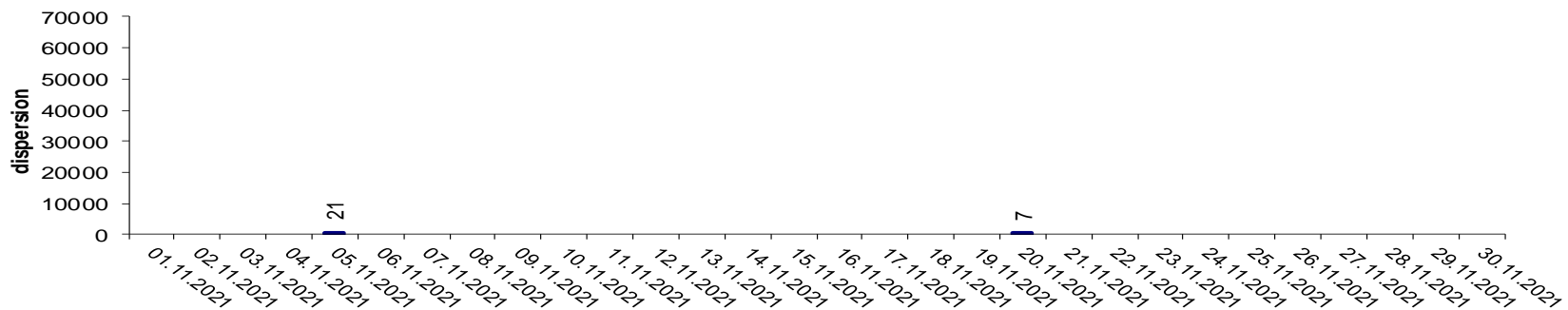
# Balancing Market

## Indicators – Price Volatility for Secondary Regulation

Price Volatility for Secondary Upward Regulation



Price Volatility for Secondary Downward Regulation



Volatility = price dispersion on studied interval:

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



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