



**Transelectrica®**  
Societate Administrată în Sistem Dualist

# **MARKET MONITORING REPORT**

## **Balancing Market**

### **December 2023**

ANRE - Romanian Energy Regulatory Authority  
HHI - Herfindahl-Hirschman Index  
BRP - Balance Responsible Party  
BMP - Balancing Market Participant  
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  
NRA – National Regulatory Authority

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).



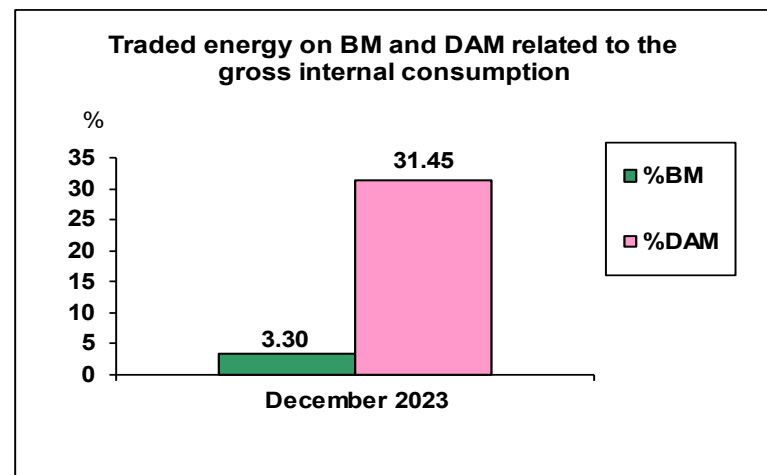
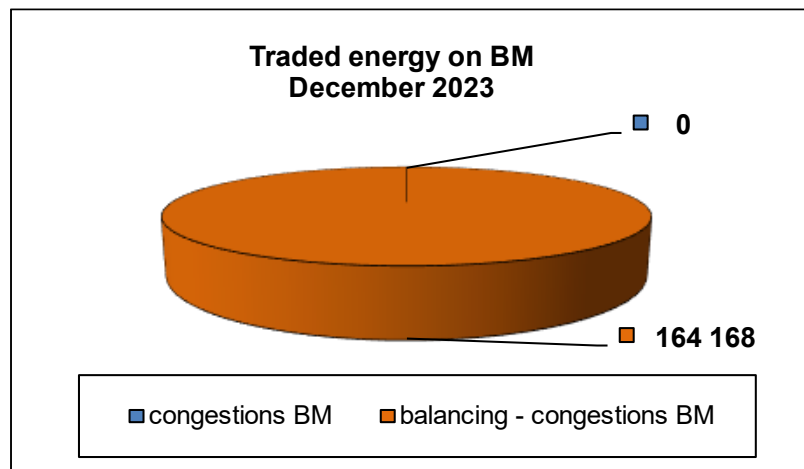
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- At the beginning of the month on the Balancing Market operated 110 BRPs, 92 market participants, holding 181 commercially operating dispatchable units. According to the provisions of ANRE Order no. 213/2020, as subsequently amended and supplemented during the month, the following changes were made:
  - were registered in the BM during the probationary period, the following BRPs:
    - ✓ GLODENI ENERGY (PROBE) (30XROGLODENI---B) (16.12) following the start of the trial period for the solar production unit GLODENI\_PROBE;
    - ✓ ESPE ENERGIA (PROBE) (30XROESPEPROBE-I) (20.12), following the start of the trial period for the solar production unit OLARI\_PROBE;
    - ✓ VIGOLANA (PROBE) (30XROVIGOLANA--5) (21.12), following the start of the trial period for the solar production unit ALEXANDRIA2\_PROBE;
    - ✓ CEVEDALE (PROBE) (30XRO-CEVEDALE-G) (21.12), following the start of the trial period for the solar production unit CVD\_PROBE;
  - exited BM, BRP ECO VOLTAIC (PROBE) (30XROECOVOLTAICZ) (20.12), as a result of the termination of the testing period for the solar production unit MACIUCA\_PROBE.
- During the month, the following changes were made in the BM platform:
  - ✓ as of 20<sup>th</sup> of December 2023 dispatchable wind production unit BAIA3 (30W-BAIA3-----7) was registered, with BLUE PLANET (30XROBLUEPLAN—V) as BMP and ENEL-CIGA (30XROENEL-CIGA-Z) as BRP;
  - ✓ as of 20<sup>th</sup> of December 2023 the non-dispatchable solar production unit MACIUCA was registered, with ENEL-CIGA (30XROENEL-CIGA-Z) as BRP, after the end of the trial period of the MACIUCA\_PROBE production unit;

## The Balance Generation/Consumption

- The average monthly value of generated power was 7 161 MW and the actual internal gross consumption was 6 695 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 2%. 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 **4.24%**. The greatest daily deviation regarding the notifications was registered on 25<sup>th</sup> of December (**14.31%**).
- The energy used in December 2023 for balancing the power system and congestion management was 164 168 MWh (with an average power of 221 MW, which means **3.3%** from the internal gross consumption).
- There was no energy used for congestion management, nor for transactions outside BM (with financial compensation).
- The energy used in December 2023 on Day Ahead Market was de 1 566 493 MWh (with an average power of 2 106 MW, which means 31.45% from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 141 515 698 lei (with an average weighted price of 862.02 lei/MWh).



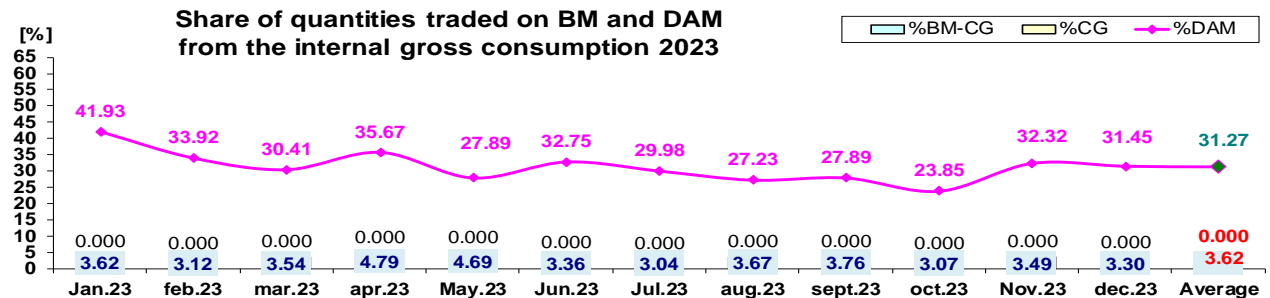
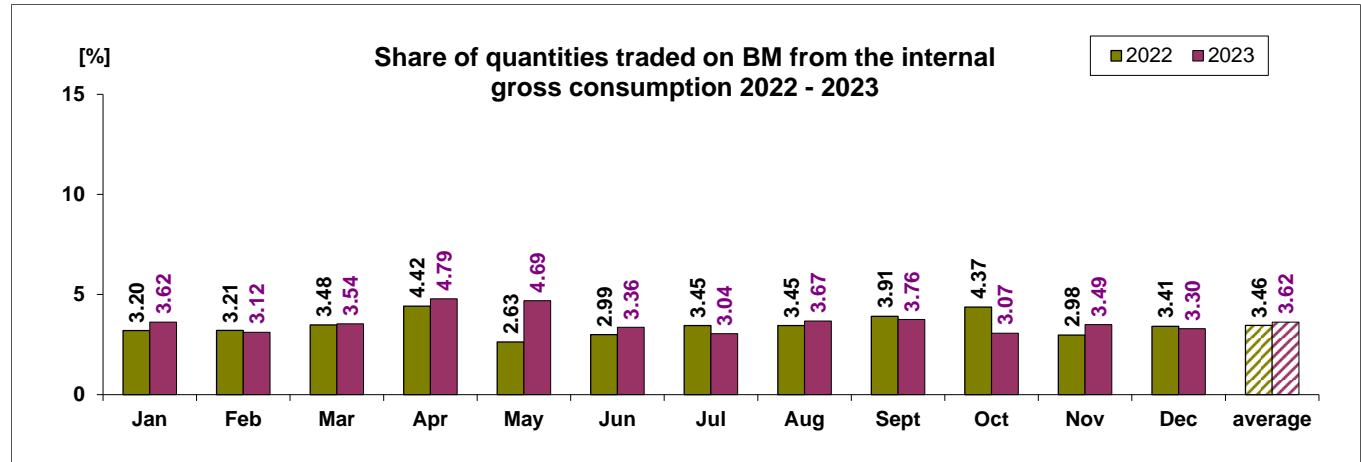


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# Balancing Market

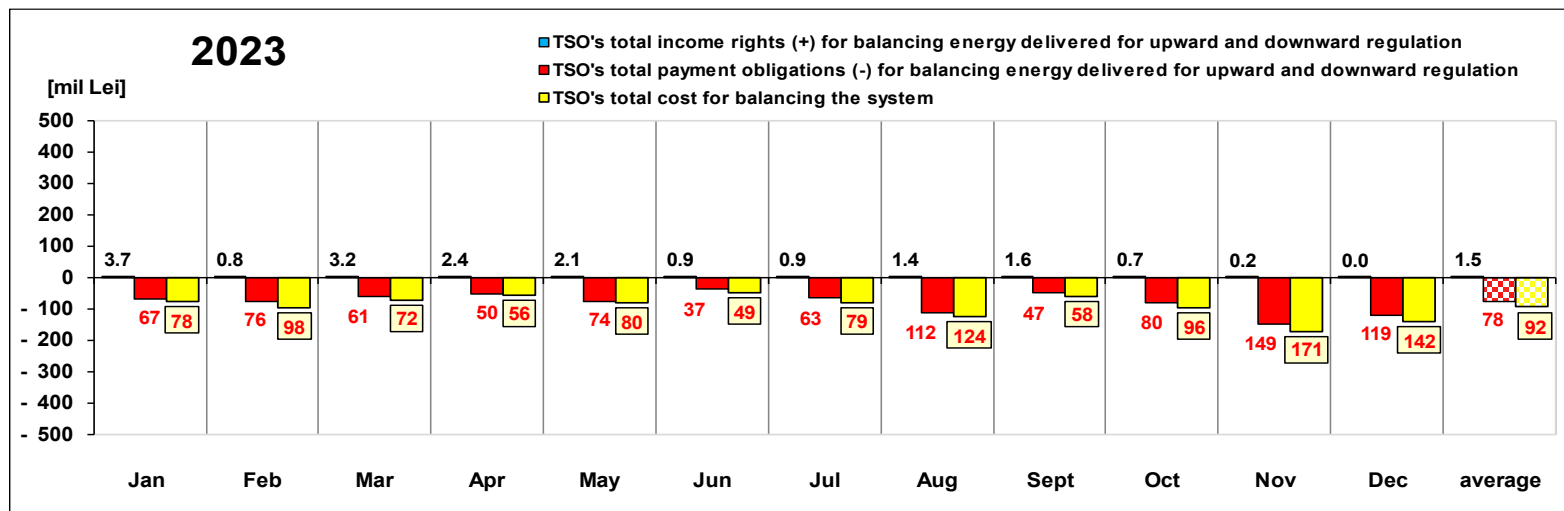
## The Balance Generation / Consumption

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



2023													
	Jan.23	feb.23	mar.23	apr.23	May.23	Jun.23	Jul.23	aug.23	sept.23	oct.23	Nov.23	dec.23	Average
%BM	3.62	3.12	3.54	4.79	4.69	3.36	3.04	3.67	3.76	3.07	3.49	3.30	3.62
%DAM	41.93	33.92	30.41	35.67	27.89	32.75	29.98	27.23	27.89	23.85	32.32	31.45	31.27
%CG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
%BM-CG	3.620	3.117	3.538	4.785	4.694	3.361	3.042	3.674	3.757	3.070	3.494	3.296	3.621
% outside BM	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.01

# 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	3 671 254	764 288	3 191 826	2 401 619	2 148 297	863 275	876 789	1 355 937	1 572 926	652 619	159 926	36 461	1 474 601	17 695 217
	payments (-) prices < 0	-18 058 105	-13 750 607	-2 780 494	-2 350 152	-47 431 536	-1 766 011	-8 527 301	-19 279 175	-11 283 967	-11 655 754	-13 505 403	-24 770 393	-14 596 575	-175 158 897
TSO's payment obligations / income rights for balancing energy delivered for upward regulation	payments (-) prices ≥ 0	-48 959 475	-62 157 235	-57 883 797	-47 817 479	-27 021 006	-34 764 702	-54 359 588	-93 001 775	-35 707 283	-68 709 476	-135 304 735	-93 855 102	-63 295 138	-759 541 651
	incomes (+) prices < 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TSO's total income rights (+) for balancing		3 671 254	764 288	3 191 826	2 401 619	2 148 297	863 275	876 789	1 355 937	1 572 926	652 619	159 926	36 461	1 474 601	17 695 217
TSO's total payment obligations (-) for		-67 017 580	-75 907 841	-60 664 291	-50 167 631	-74 452 541	-36 530 713	-62 886 889	-112 280 949	-46 991 250	-80 365 230	-148 810 138	-118 625 495	-77 891 712	-934 700 548
TSO's total cost for balancing the system		-78 018 832	-97 917 681	-71 922 686	-55 930 994	-80 062 808	-49 361 669	-79 044 687	-124 460 308	-58 166 023	-96 097 589	-171 264 685	-141 515 698	-91 980 305	-1 103 763 662
Value of transactions outside BM (with Congestion Cost on BM)		0	0	0	-66 398	-14 919	0	0	0	0	0	0	0	-6 776	-81 317
Congestion Cost outside BM		0	0	0	-88 286	0	0	0	0	0	0	-1 617	0	-7 492	-89 903

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

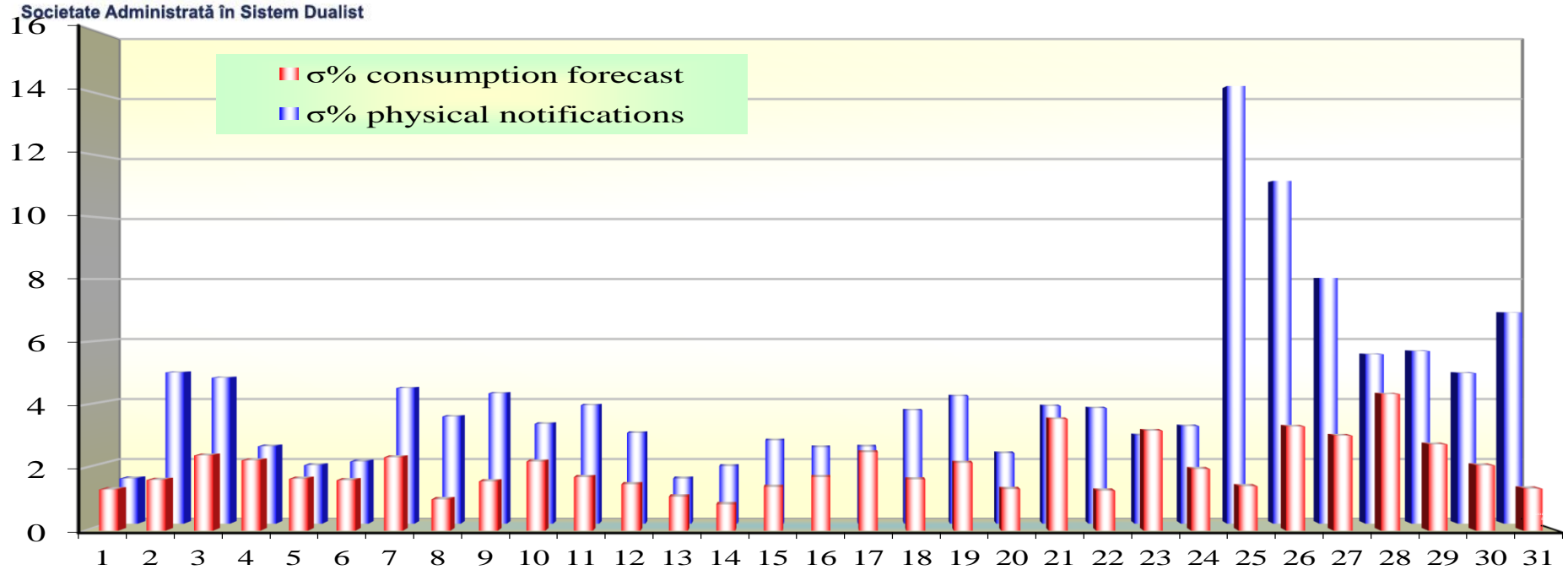


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# Balancing Market

Standard deviation of physical notifications and consumption forecast against the actual consumption in December 2023



dec 2023

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	1.31	1.61	2.39	2.24	1.65	1.60	2.33	1.00	1.57	2.20	1.70	1.48	1.08	0.84	1.39	1.70	2.50	1.63	2.16	1.32	3.55	1.27	3.18	1.96	1.41	3.31	3.02	4.34	2.74	2.08	1.34
σ% physical notifications	1.47	4.95	4.77	2.53	1.91	2.03	4.43	3.50	4.26	3.26	3.87	2.97	1.47	1.88	2.72	2.50	2.52	3.71	4.17	2.30	3.85	3.78	2.89	3.19	14.31	11.21	8.04	5.54	5.64	4.92	6.90

σ<sub>average % consumption forecast</sub> = 2.00

σ<sub>average % physical notifications</sub> = 4.24

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

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

**R = Realized Consumption;**

**N = Physical Notifications;**

**P = Consumption Forecast.**

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# Balancing Market

## Balancing energy – Selected prices and quantities in December 2023

December 2023

Downward Regulation

Downward Regulation	Prices			Quantities			Participants						
	Weighted				Actually		C1		C3	C1	C3	HHI	HHI
	Average	Maximum	Minimum	Selected	Delivered	Deviation							
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	-748.28	0.10	-1400.00	26356.95	26356.95	0.00%	4	59.34%	98.64%	59.34%	98.64%	4343	4343
Fast Tertiary	-78.93	100.00	-300.00	66946.40	63838.94	4.64%	14	40.38%	86.36%	40.33%	87.16%	3001	3060
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				93303.34	90195.88	3.33%							

Upward Regulation

	<div>Weighted Average</div>			<div>Actually Delivered</div>									
	Maximum	Minimum		Selected	Deviation		C1	C3	C1	C3	HHI	HHI	
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	2498.91	3100.00	2000.00	15376.36	15376.36	0.00%	4	60.73%	98.60%	60.73%	98.60%	4530	4530
Fast Tertiary	947.08	1550.95	446.05	59700.30	58595.44	1.85%	9	87.72%	96.58%	87.59%	96.56%	7750	7729
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				75076.66	73971.80	1.47%							



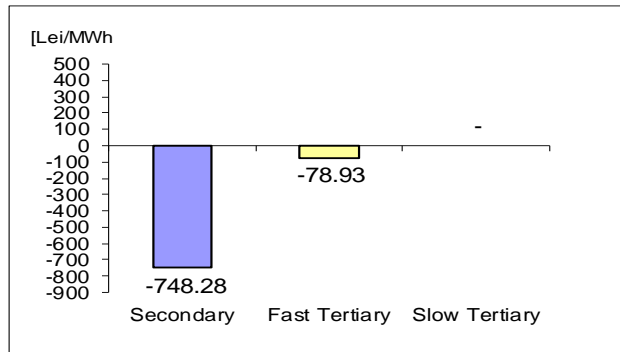
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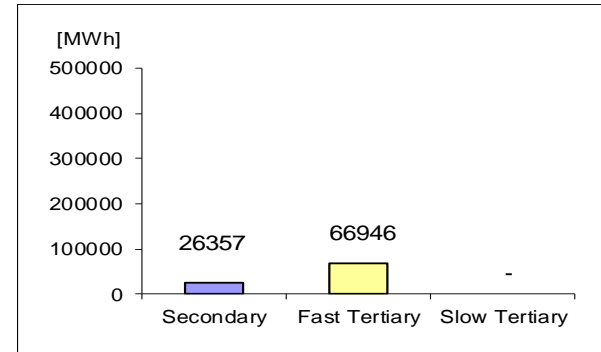
## Balancing energy – Selected prices and quantities in December 2023

December 2023

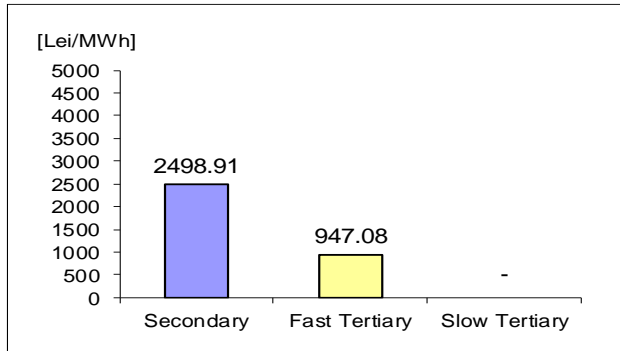
Downward regulation - average price [lei/MWh]



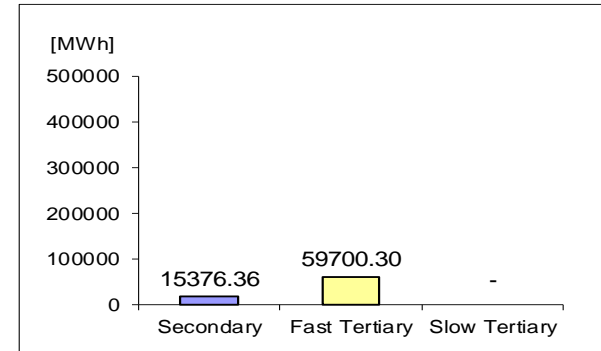
Downward regulation - selected quantities



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  $i$ .

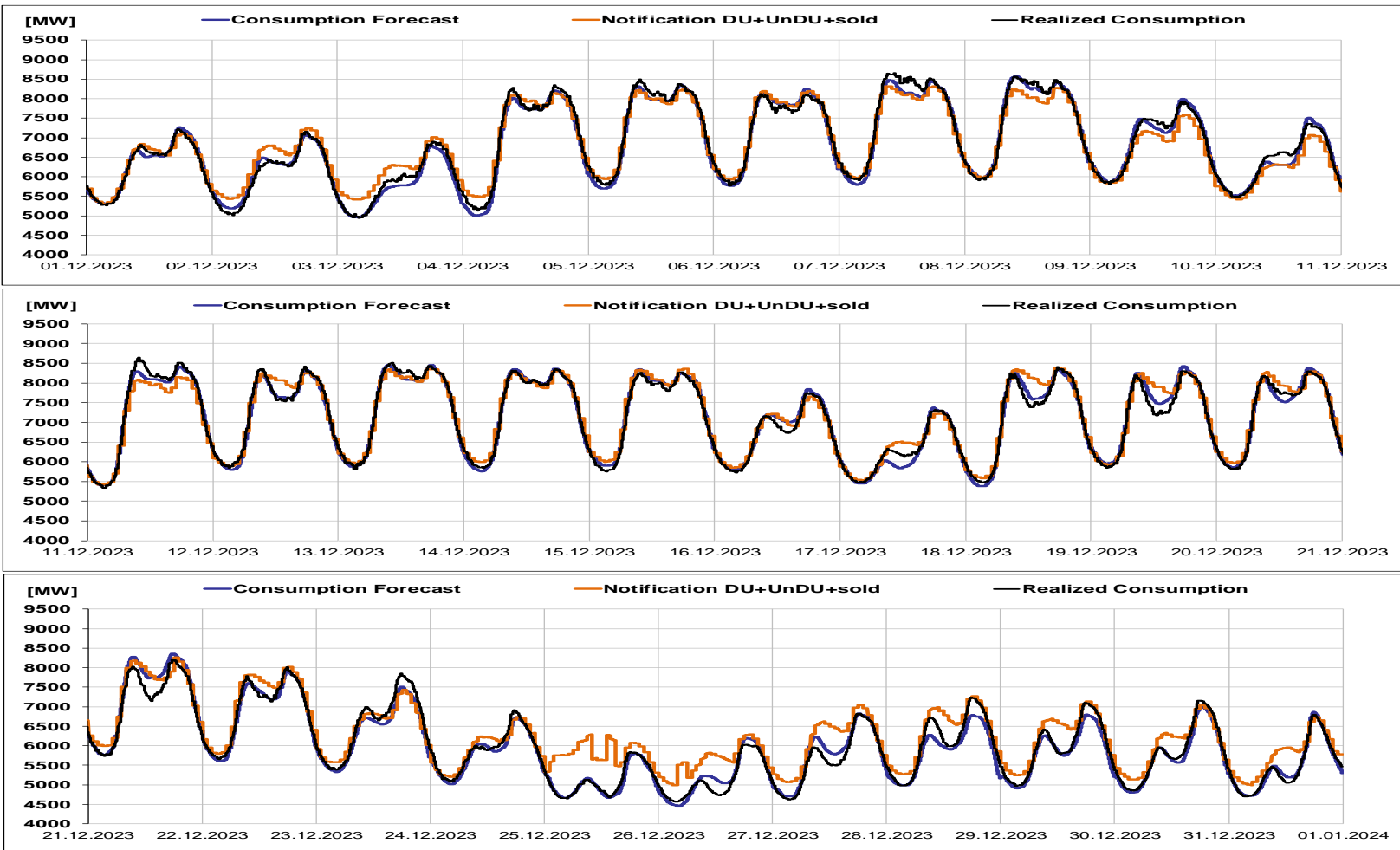


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# Balancing Market

Realized consumption, forecast, notifications in D-1



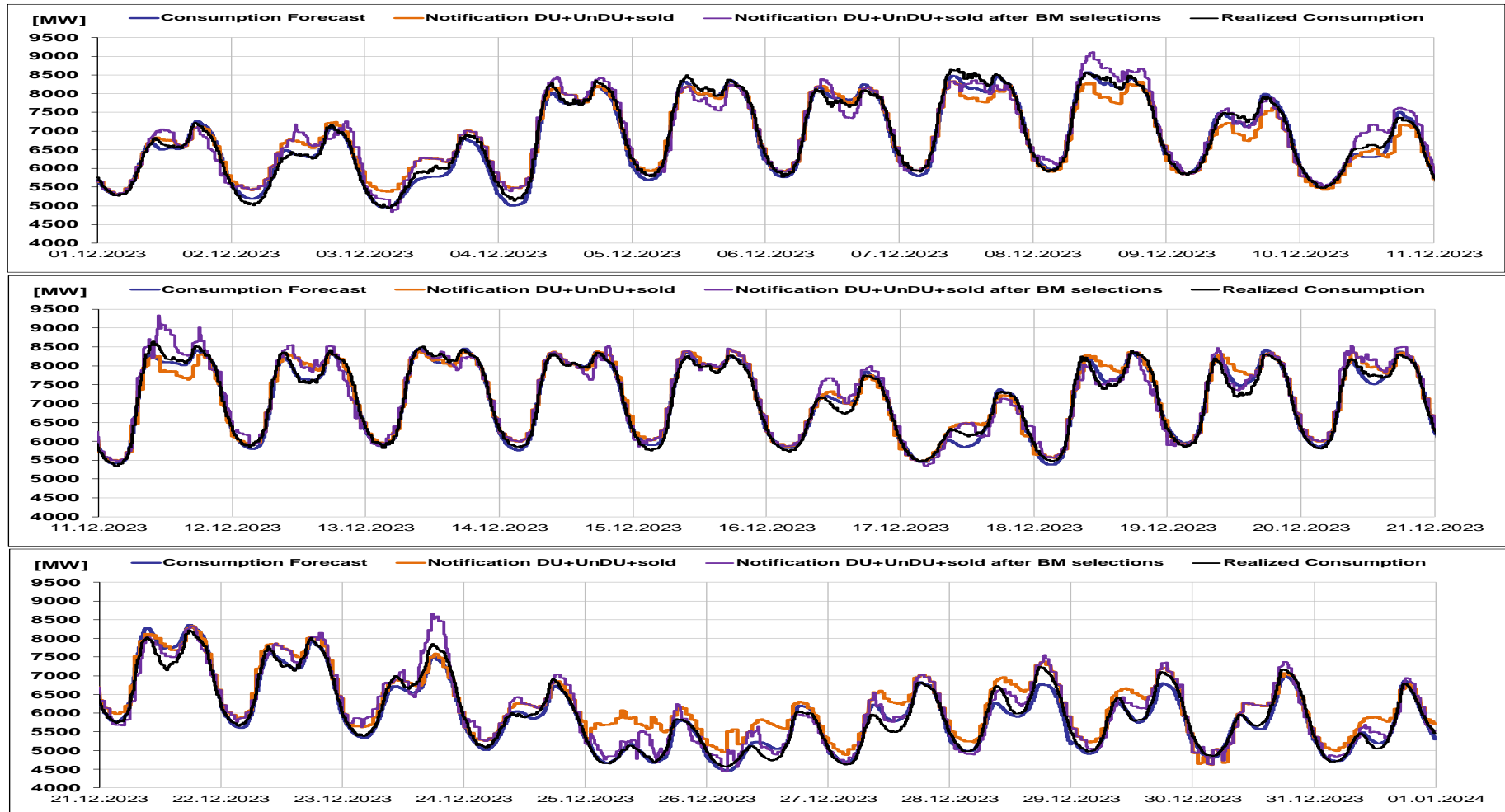


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# Balancing Market

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





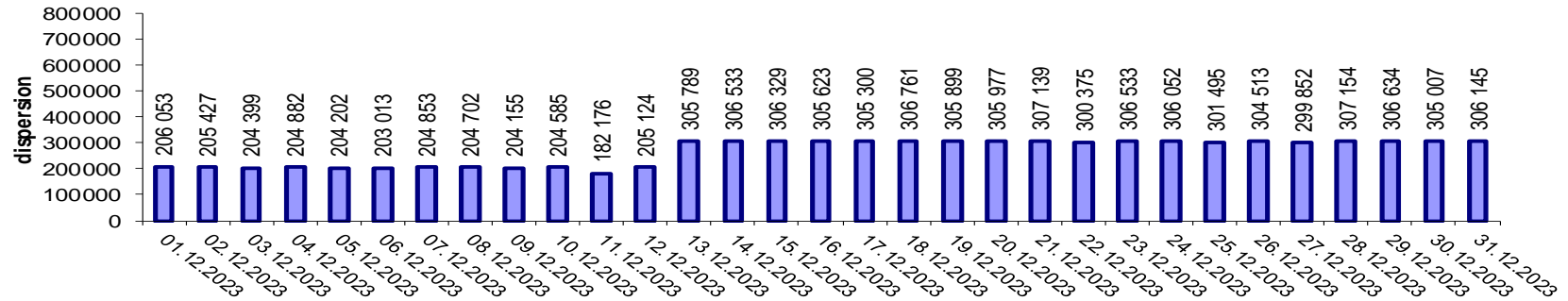
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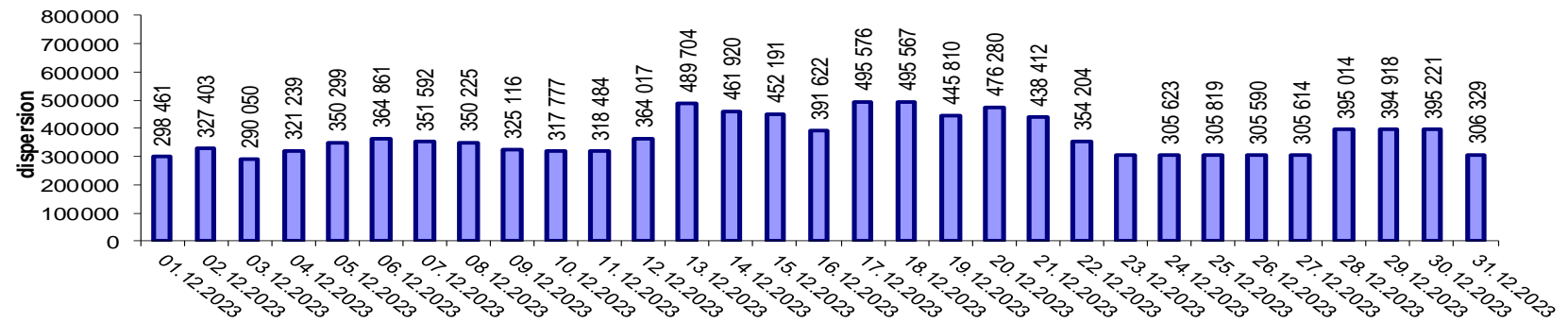
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## Indicators – Price Volatility for Secondary Regulation

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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