



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

October 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 (section Transparency).

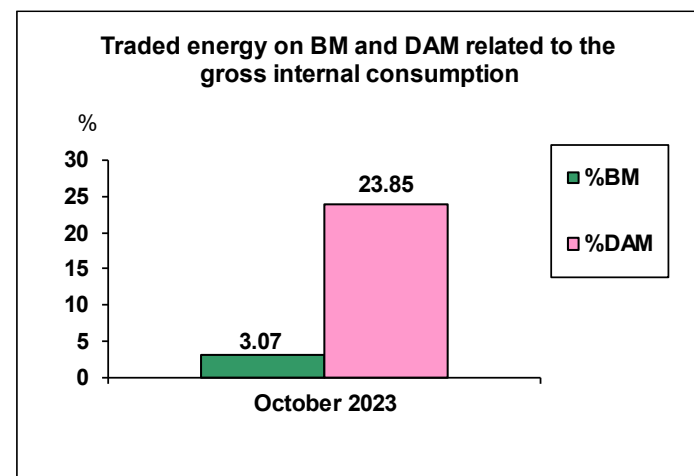
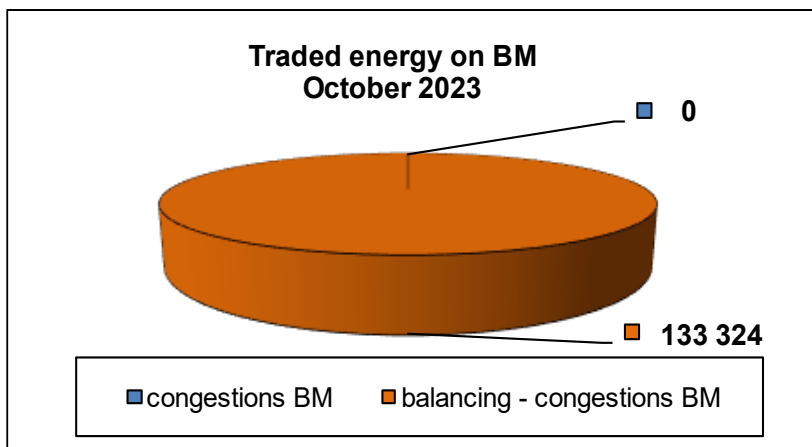
- At the beginning of the month on the Balancing Market operated 103 BRPs, 91 market participants, holding 180 commercially operating dispatchable units. During the month, the following changes were made in the BM platform:
 - ✓ as of 10th of October 2023, non-dispatchable units CEG4-CT and CEG5-CT became dispatchable production units CEG4 having as BMP E-INFRA (30XROE-INFRA---E) and CEG5 having as BMP WIND ENERGY SERVICE EAST EUROPE (30XROWESEE-----Q);
 - ✓ as of 25th of October 2023, DU Paroseni within COMPLEXULUI ENERGETIC HUNEDOARA S.A. (30XROTERMOMODEVA-L) was taken over by BMP SOCIETATEA COMPLEXUL ENERGETIC VALEA JIULUI SA (30XROCEVJ-----P).

According to the provisions of ANRE Order no. 213/2020, as subsequently amended and supplemented, the following BRPs were registered in the BM:

- were registered in the BM during the probationary period, the following BRPs:
 - ✓ DANUBIU CETVOLT (PROBE) (30XROCETVOLT---8) (01.10), following the start of the trial period for the solar production unit CETATE3_PROBE;
 - ✓ MOLDOVA EOLIAN (PROBE) (30XROMOLDOVIAE-V) (01.10), following the start of the trial period for the wind production unit RUGINOASA;
 - ✓ ACV SOLAR ENERGY (PROBE)(30XROACVSEENERGYU) (04.10), following the start of the trial period for the solar production unit ACV_PROBE;
 - ✓ OCTOGON (30XRO-OCTAGONX-R) (18.10), following the start of the trial period for the solar production unit OCTOGON_PROBE;
- were removed from BM from the probationary period, the following BRPs:
 - ✓ BIO VANATORI (PROBE) (30XROBIOVANATORS) (01.10) as a result of the termination of the trial period at the solar production unit VANATORI_PROBE;
 - ✓ MIO SOLAR POWER (PROBE) (30XROMIOSOLARP-H) (02.10) as a result of the termination of the trial period at the solar production unit MIOSOLAR_PROBE;
 - ✓ SPRINGSOME (PROBE) (30XROSPPRINGSOMEK) (27.10) as a result of the termination of the trial period at the wind production unit SPRINGPROBE.

The Balance Generation/Consumption

- The average monthly value of generated power was 5 806 MW and the actual internal gross consumption was 5 830 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 2.47%. 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 **5.25%**. The greatest daily deviation regarding the notifications was registered on 14th of October (**10.08%**).
- The energy used in October 2023 for balancing the power system and congestion management was 133 324 MWh (with an average power of 179 MW, which means **3.07%** 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 October 2023 on Day Ahead Market was de 1 035 784 MWh (with an average power of 1 390 MW, which means 23.85% from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 96 085 788 lei (with an average weighted price of 720.69 lei/MWh).



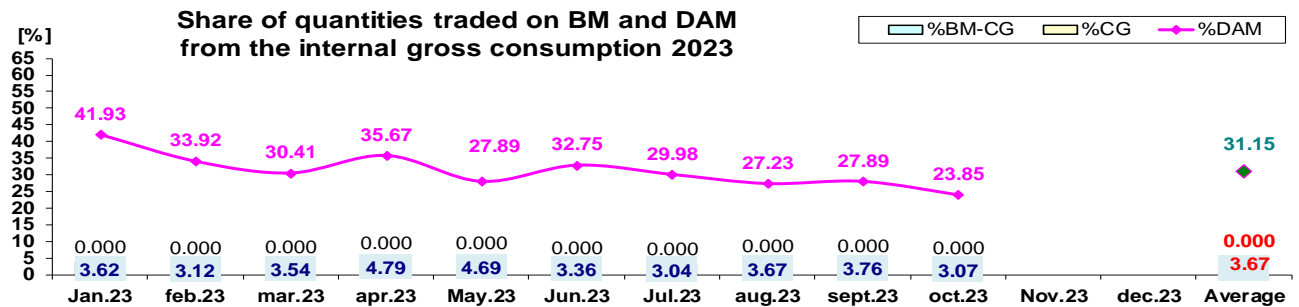
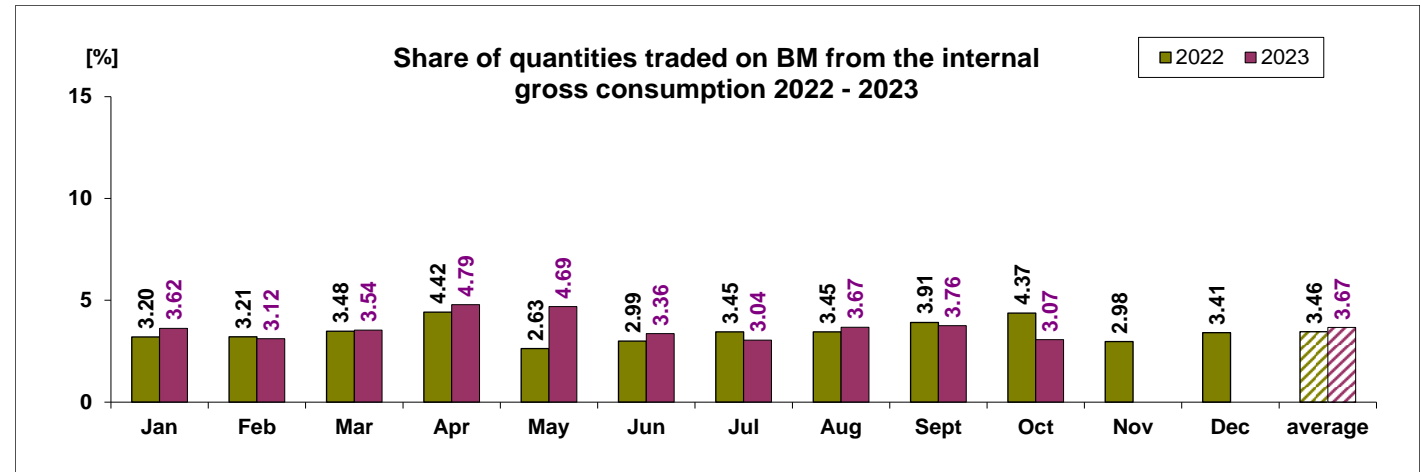


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Balancing Market

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).



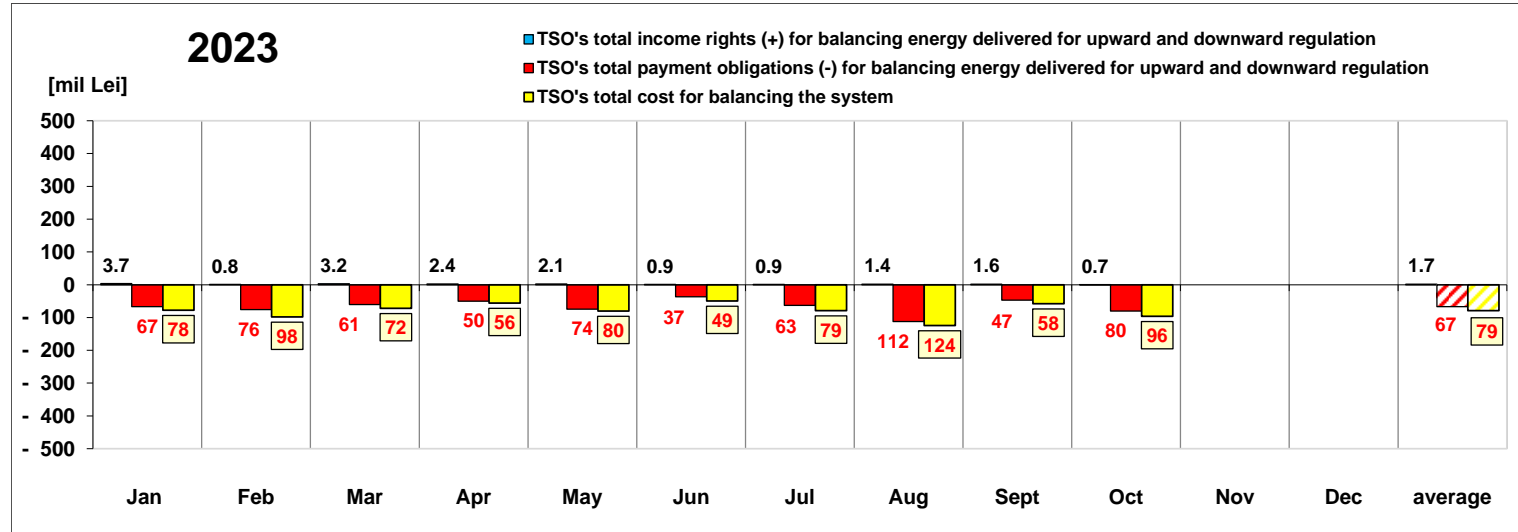
	2023												
	Jan.23	feb.23	mar.23	apr.23	May.23	Jun.23	Jul.23	aug.23	sept.23	oct.23	Nov.23	dec.23	Average
%BM	3.62	3.12	3.54	4.79	4.69	3.36	3.04	3.67	3.76	3.07			3.67
%DAM	41.93	33.92	30.41	35.67	27.89	32.75	29.98	27.23	27.89	23.85			31.15
%CG	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	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			3.666
% outside BM	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00			0.01



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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	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			1 749 883	17 498 830
	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			-13 688 310	- 136 883 101
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			-53 038 181	- 530 381 814
	incomes (+) prices < 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			1 749 883	17 498 830
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			-66 726 491	- 667 264 915
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			-79 098 328	- 790 983 278
Value of transactions outside BM (with		0	0	0	- 66 398	- 14 919	0	0	0	0	0			- 8 132	- 81 317
Congestion Cost on BM		0	0	0	0	0	0	0	0	0	0			0	0
Congestion Cost outside BM		0	0	0	- 88 286	0	0	0	0	0	0			- 8 829	- 88 286

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

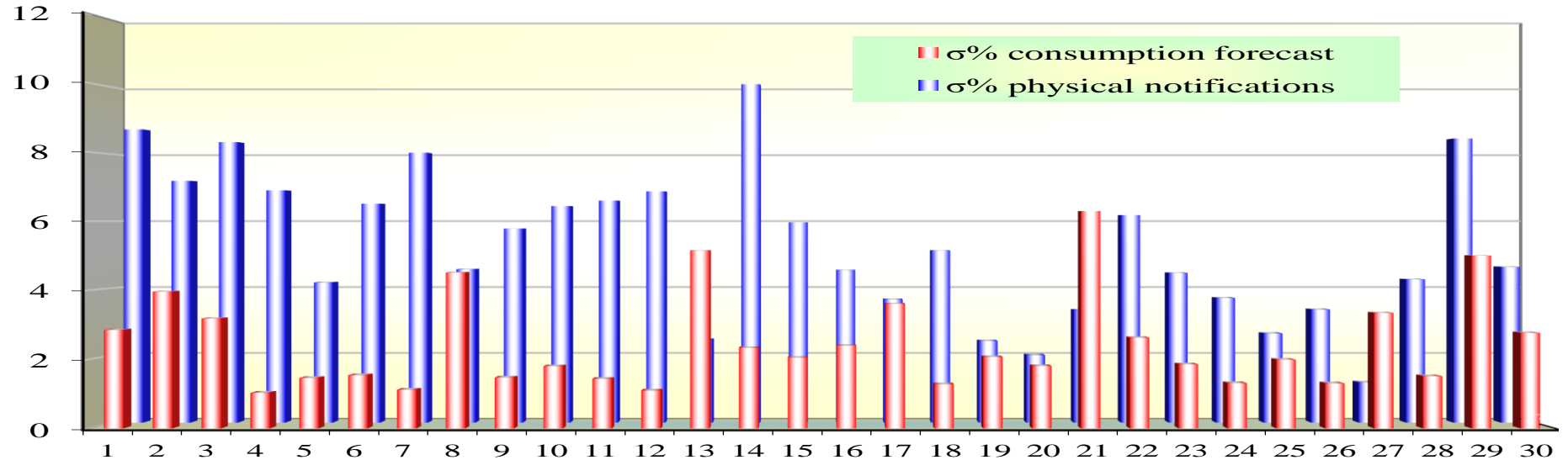


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Standard deviation of physical notifications and consumption forecast against the actual consumption in October 2023



oct 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	2.85	3.96	3.18	1.03	1.46	1.54	1.12	4.51	1.47	1.80	1.43	1.09	5.15	2.33	2.05	2.40	3.61	1.28	2.07	1.81	6.29	2.63	1.85	1.31	1.99	1.30	3.34	1.51	5.00	2.77	2.31
σ% physical notifications	8.73	7.20	8.35	6.92	4.17	6.52	8.04	4.56	5.78	6.45	6.61	6.89	2.47	10.08	5.96	4.54	3.67	5.13	2.43	2.01	3.35	6.18	4.46	3.71	2.65	3.37	1.19	4.27	8.46	4.64	3.89

σ_{average} % consumption forecast = 2.47

σ_{average} % physical notifications = 5.25

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

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Balancing Market

Balancing energy – Selected prices and quantities in October 2023

October 2023

Downward Regulation

Downward Regulation	Prices			Quantities			Participants						
	Weighted				Actually								
	Average	Maximum	Minimum	Selected	Delivered	Deviation		C1	C3	C1	C3	HHI	HHI
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)		(actually delivered)	(selected)		(actually delivered)
Secondary	-445.39	0.10	-900.00	25301.53	25301.53	0.00%	4	71.07%	98.8%	71.07%	98.8%	5554	5554
Fast Tertiary	4.55	255.00	-285.00	64136.97	61936.49	3.43%	14	63.94%	96.32%	63.72%	96.69%	5044	5050
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				89438.50	87238.02	2.46%							

Upward Regulation

	Prices			Quantities			Participants						
	Weighted	Maximum	Minimum	Selected	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	Average				Delivered								
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	2257.40	2600.00	764.43	14540.49	14540.49	0.00%	4	73.02%	98.67%	73.02%	98.67%	5787	5787
Fast Tertiary	1140.38	2004.98	446.03	32440.68	31545.59	2.76%	8	75.1%	91.32%	74.82%	91.34%	5840	5804
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				46981.17	46086.08	1.91%							

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

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 .

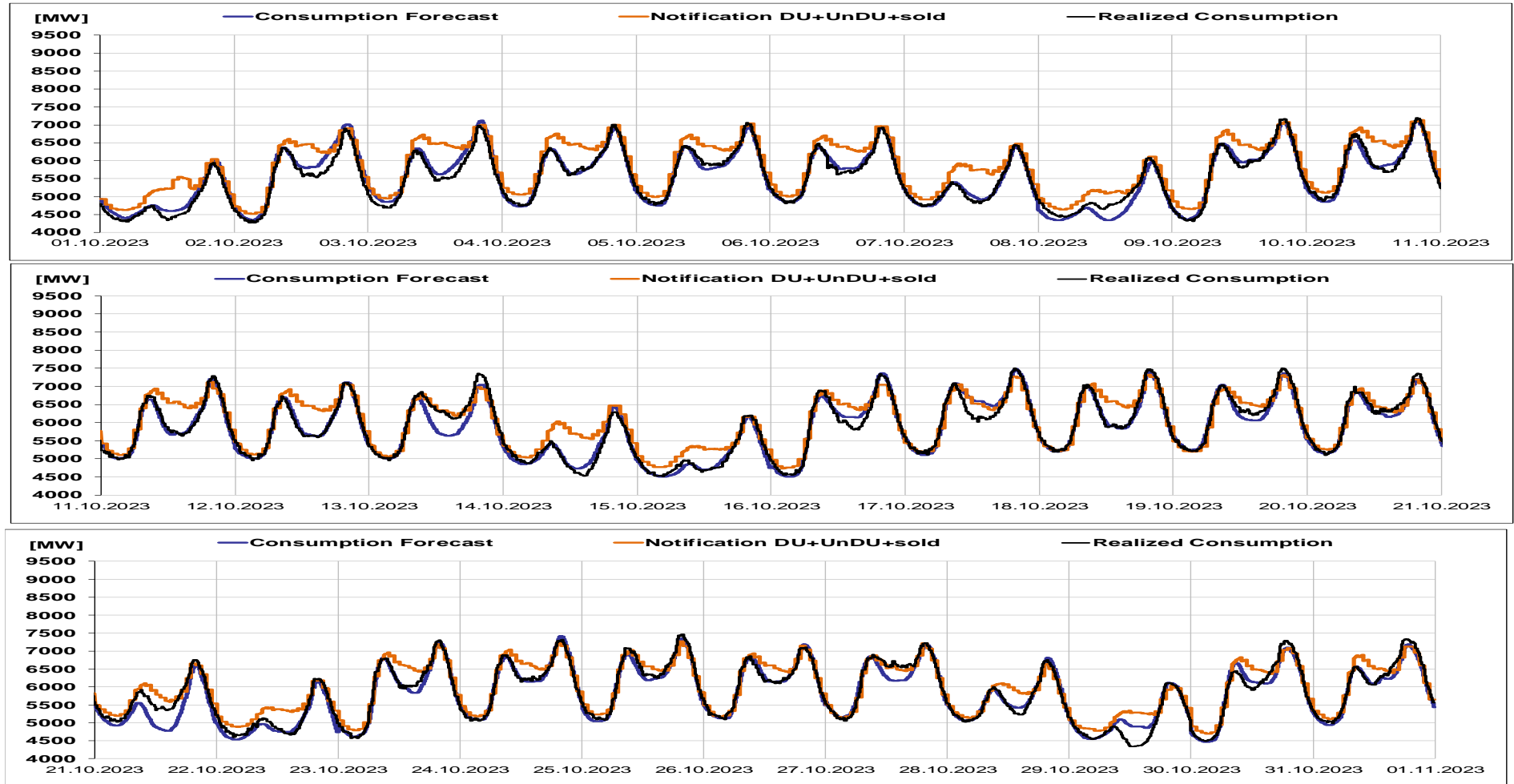


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Realized consumption, forecast, notifications in D-1



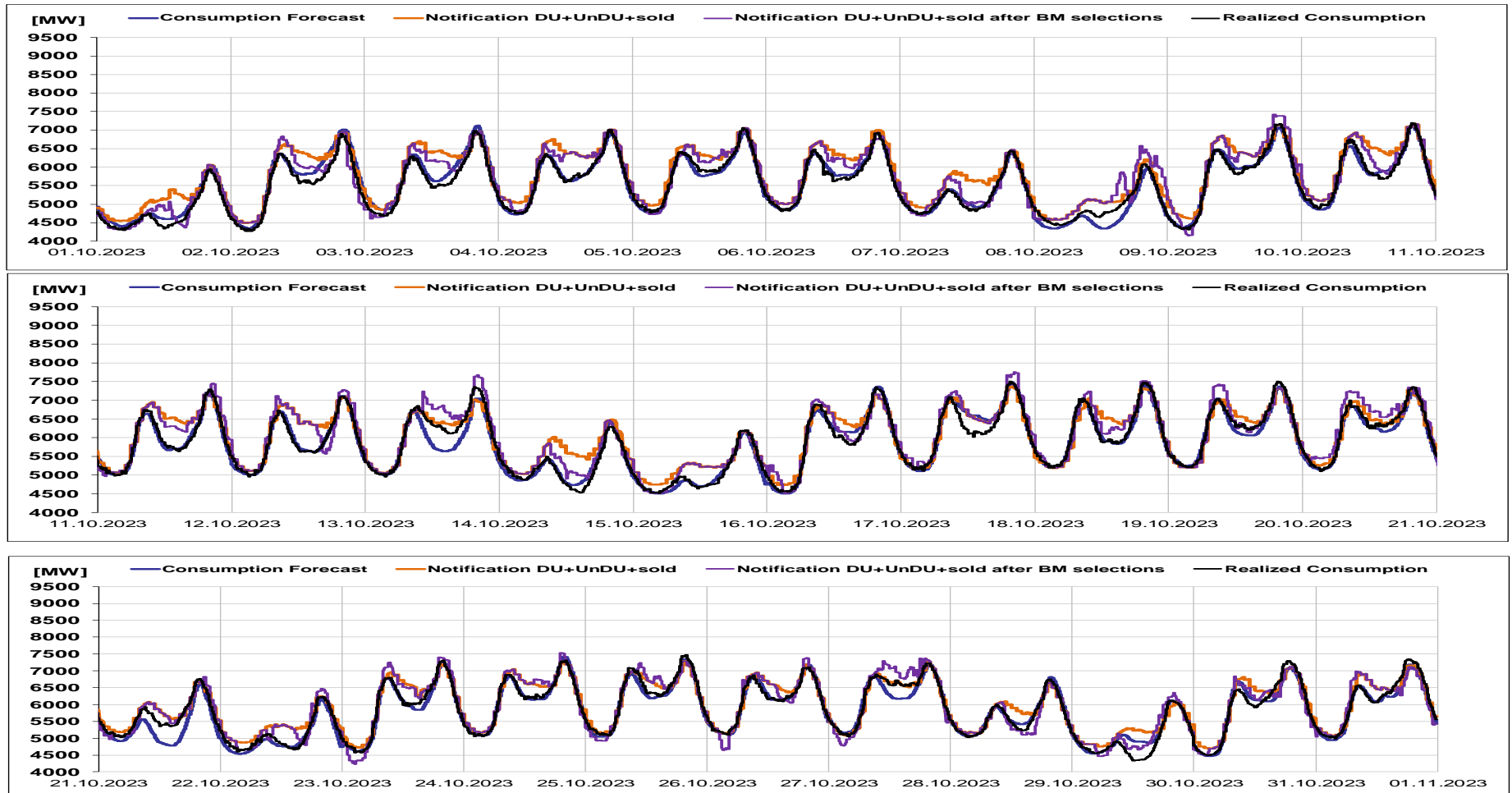


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Balancing Market

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





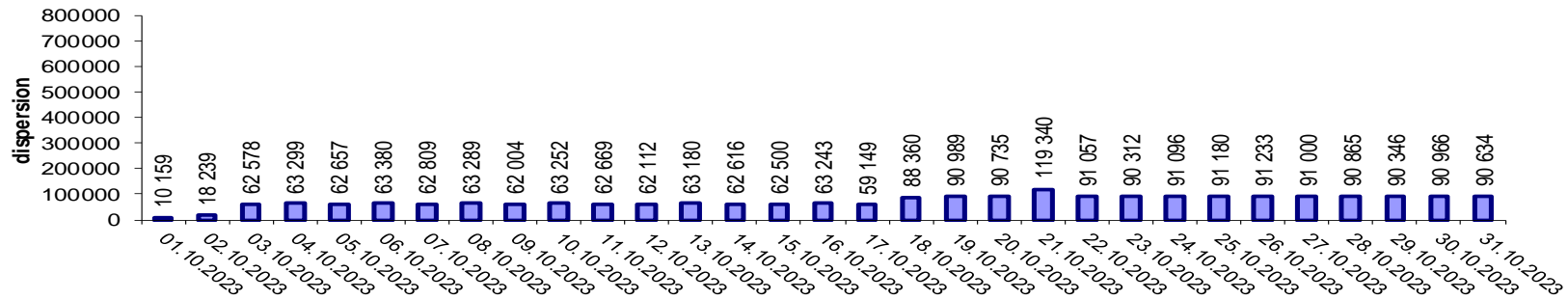
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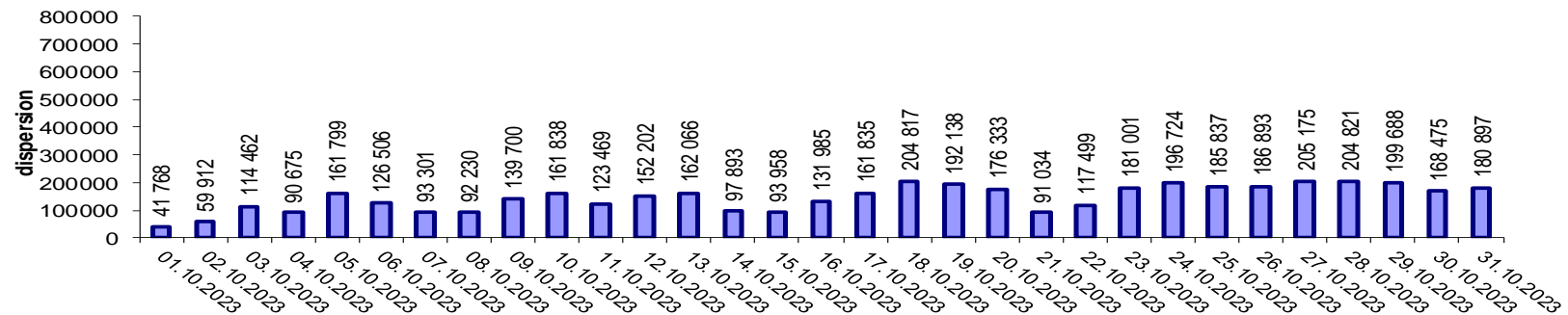
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Indicators – Price Volatility for Secondary Regulation

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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