



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

January 2024

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.

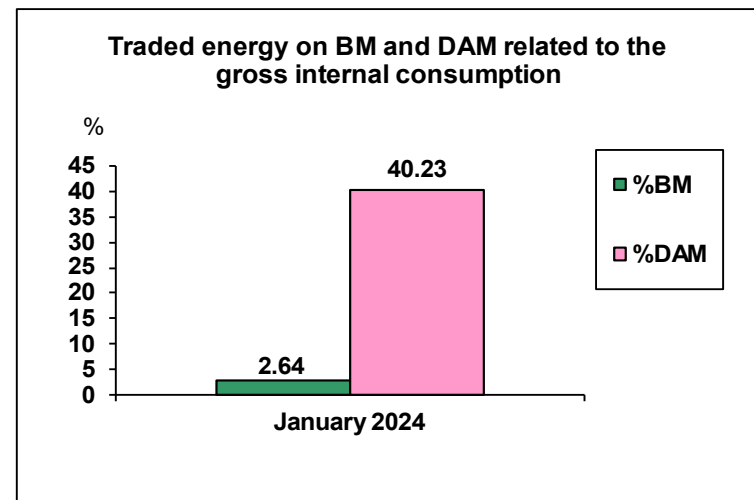
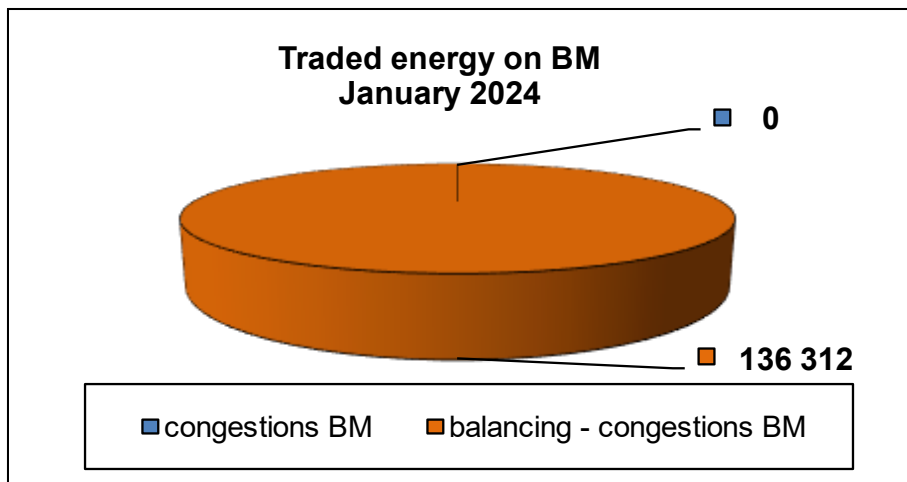
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website www.transelectrica.ro (section Transparency).



- At the beginning of the month on the Balancing Market operated 114 BRPs, 94 market participants, holding 183 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:
 - ✓ BRENTFORD SOLAR (PROBE)(30XROBRENTFDSOL8) (11.01) following the start of the trial period for the solar production unit FAGET2_PROBE;
 - ✓ GRUNMAN ENERGY (PROBE)(30XROGRUNMAN---0) (11.01), following the start of the trial period for the solar production unit GRUNMAN_PROBE;
 - ✓ BABA ANA SOLAR GREEN ENERGY (PROBE)(30XROBAANSOGRENY) (15.01), following the start of the trial period for the solar production unit BABAANA_PROBE;
 - ✓ DOMNESTI SOLAR FARM (PROBE)(30XRODOMNESTIS-0) (18.01), following the start of the trial period for the solar production unit DOMNESTI_PROBE;
 - ✓ GREOL INVESTMENT (PROBE)(30XROGRINVEST--N) (26.01), following the start of the trial period for the solar production unit GREOL_PROBE;
- During the month, the following changes were made in the BM platform:
 - ✓ as of 1st of January 2024 dispatchable solar production unit VALCALUG1(30W-VALCALUG---F) was registered, with ALIVE SUN POWER ONE (30XROASPO-----W) as BMP and CINTAENERGY (30XROCINTAEN---N) as BRP;
 - ✓ as of 27th of January 2024 dispatchable unit STANESTI (30W-STANESTI---R) was removed.

The Balance Generation/Consumption

- The average monthly value of generated power was 7 400 MW and the actual internal gross consumption was 6 930 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 2.35%. 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 **3.63%**. The greatest daily deviation regarding the notifications was registered on 1st of January (**6.77%**).
- The energy used in January 2024 for balancing the power system and congestion management was 136 312 MWh (with an average power of 183 MW, which means 2.64% from the internal gross consumption).
- There was no transactions outside BM (with financial compensation).
- The energy used in January 2024 on Day Ahead Market was de 2 074 419 MWh (with an average power of 2 788 MW, which means 40.23% from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 181 464 393 lei (with an average weighted price of 1 331,25 lei/MWh).



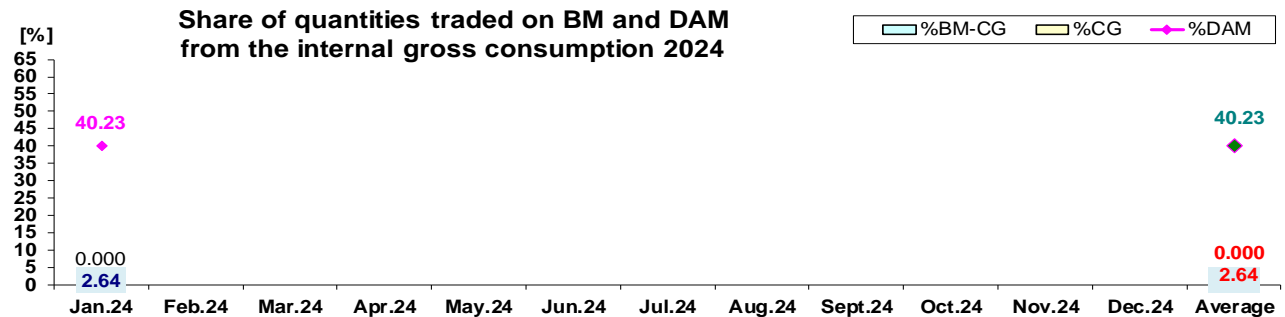
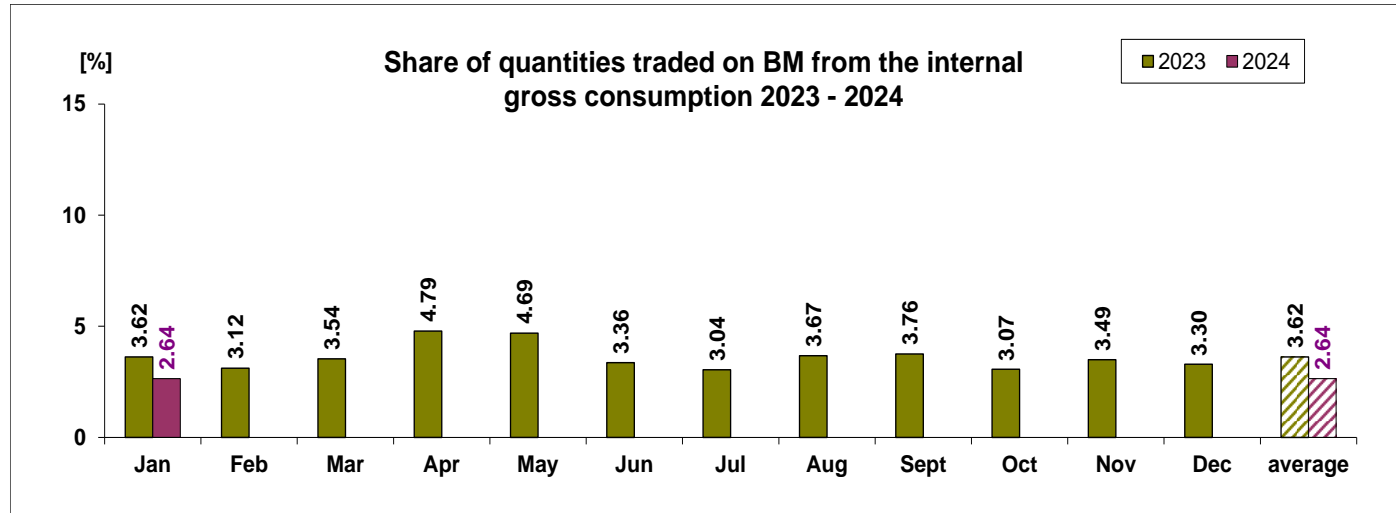


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Balancing Market

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).



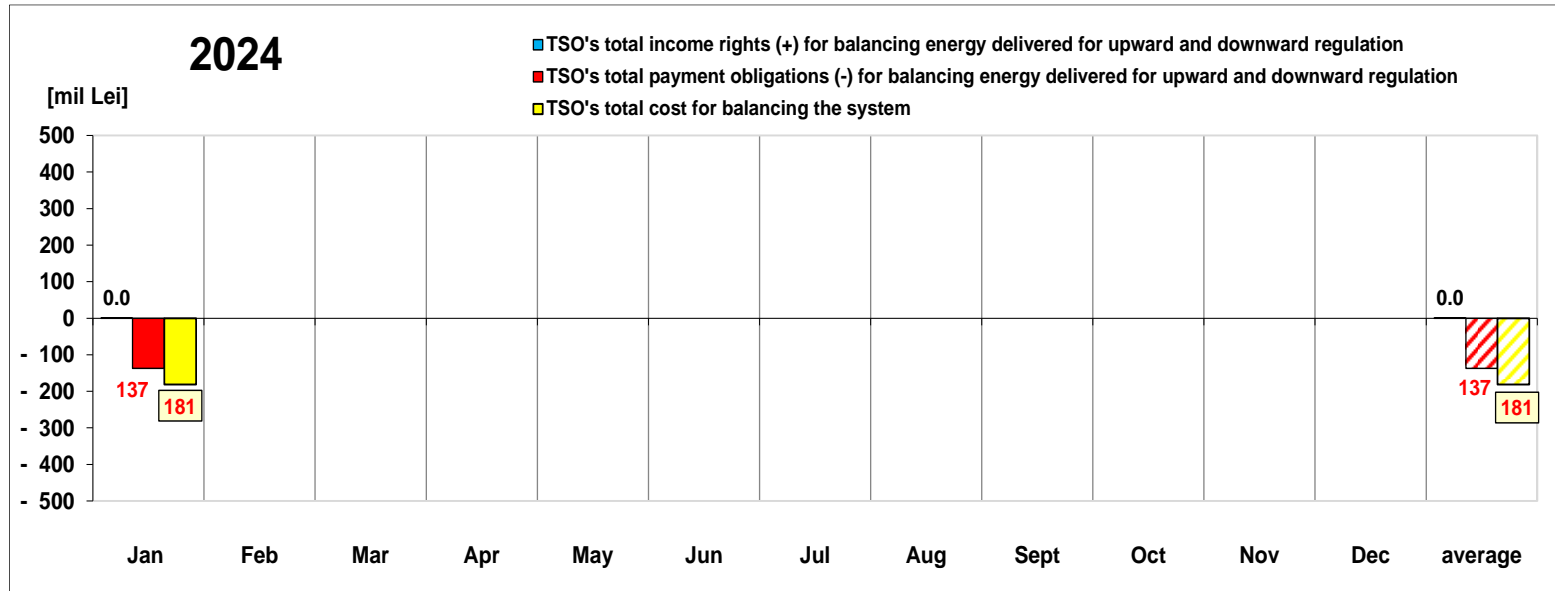
2024													
	Jan.24	Feb.24	Mar.24	Apr.24	May.24	Jun.24	Jul.24	Aug.24	Sept.24	Oct.24	Nov.24	Dec.24	Average
%BM	2.64												2.64
%DAM	40.23												40.23
%CG	0.000												0.0000
%BM-CG	2.644												2.644
% outside BM	0.00												0.00



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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														
prices ≥ 0	18 140												18 140	18 140
prices < 0	-35 668 475												-35 668 475	- 35 668 475
TSO's payment obligations / income rights for balancing energy delivered for upward regulation														
prices ≥ 0	-101 648 720												-101 648 720	- 101 648 720
prices < 0	0												0	0
TSO's total income rights (+) for balancing	18 140												18 140	18 140
TSO's total payment obligations (-) for	-137 317 196												-137 317 196	- 137 317 196
TSO's total cost for balancing the system	-181 457 105												-181 457 105	- 181 457 105
Value of transactions outside BM (with	0												0	0
Congestion Cost on BM	0												0	0
Congestion Cost outside BM	0												0	0

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

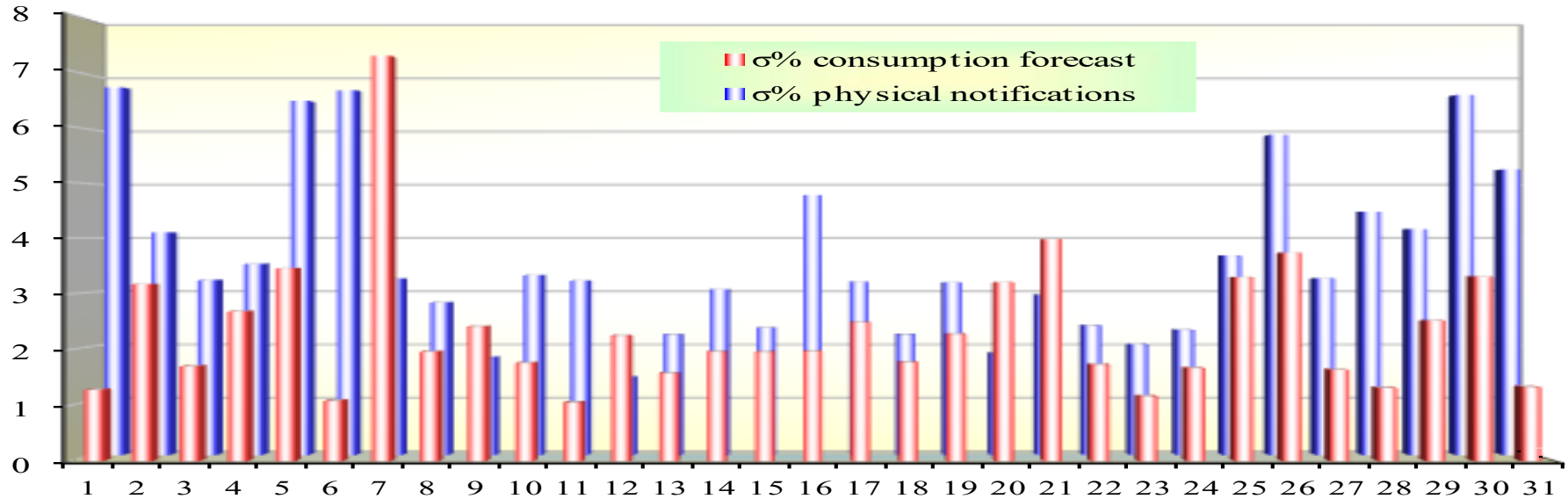
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Standard deviation of physical notifications and consumption forecast against the actual consumption in January 2024



Jan 2024

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	1.28	3.17	1.70	2.68	3.46	1.08	7.27	1.96	2.41	1.76	1.05	2.25	1.57	1.96	1.95	1.97	2.49	1.77	2.28	3.20	3.98	1.73	1.16	1.67	3.30	3.73	1.64	1.31	2.52	3.31	1.33
σ% physical notifications	6.77	4.10	3.22	3.52	6.53	6.72	3.25	2.81	1.80	3.31	3.21	1.43	2.22	3.05	2.34	4.79	3.19	2.22	3.18	1.87	2.95	2.38	2.03	2.30	3.68	5.90	3.26	4.49	4.17	6.64	5.26

σ_{average % consumption forecast} = 2.35

σ_{average % physical notifications} = 3.63

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

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Balancing energy – Selected prices and quantities in January 2024

January 2024

Downward Regulation

Downward 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	-1509.35	0.10	-1800.00	22215.18	22215.18	0.00%	4	57.54%	98.55%	57.54%	98.55%	4191
Fast Tertiary	-55.51	255.00	-300.00	40751.44	39369.05	3.39%	14	59.44%	89.42%	60.66%	90.09%	4130	4268
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				62966.61	61584.23	2.20%							

Upward Regulation

	Prices			Quantities			Participants						
	Weighted	Maximum	Minimum	Selected	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	Average				Delivered							(actually	
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(selected)	delivered)	
Secondary	3195.34	3500.00	950.00	14404.34	14404.34	0.00%	4	61.01%	98.53%	61.01%	98.53%	4541	4541
Fast Tertiary	922.59	1397.76	444.01	61596.77	60323.04	2.07%	10	75.62%	94.25%	75.77%	94.19%	5920	5937
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				76001.12	74727.39	1.68%							



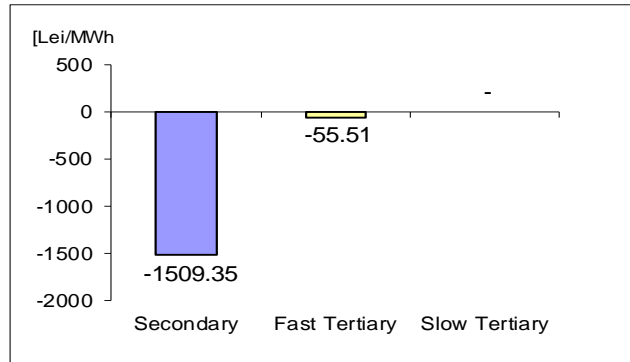
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Balancing Market

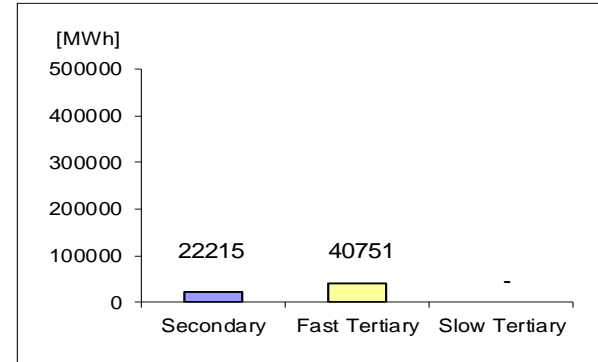
Balancing energy – Selected prices and quantities in January 2024

January 2024

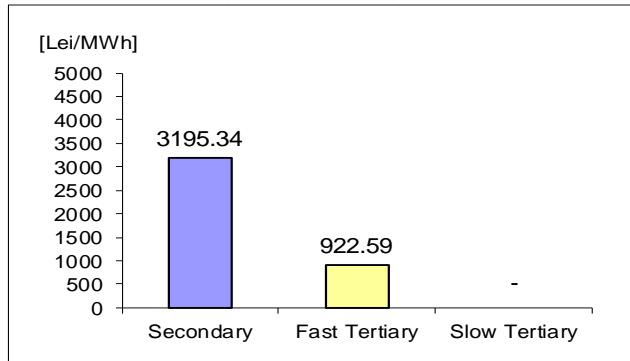
Downward regulation - average price [lei/MWh]



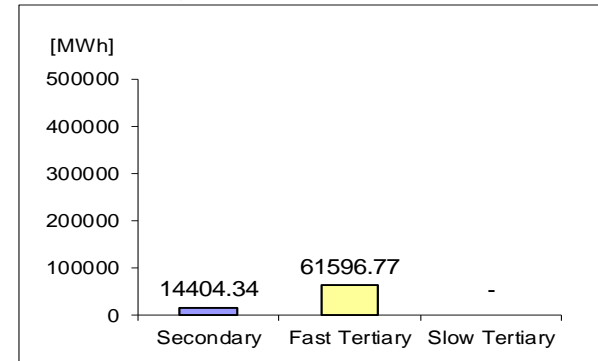
Downward regulation - selected quantities



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 .

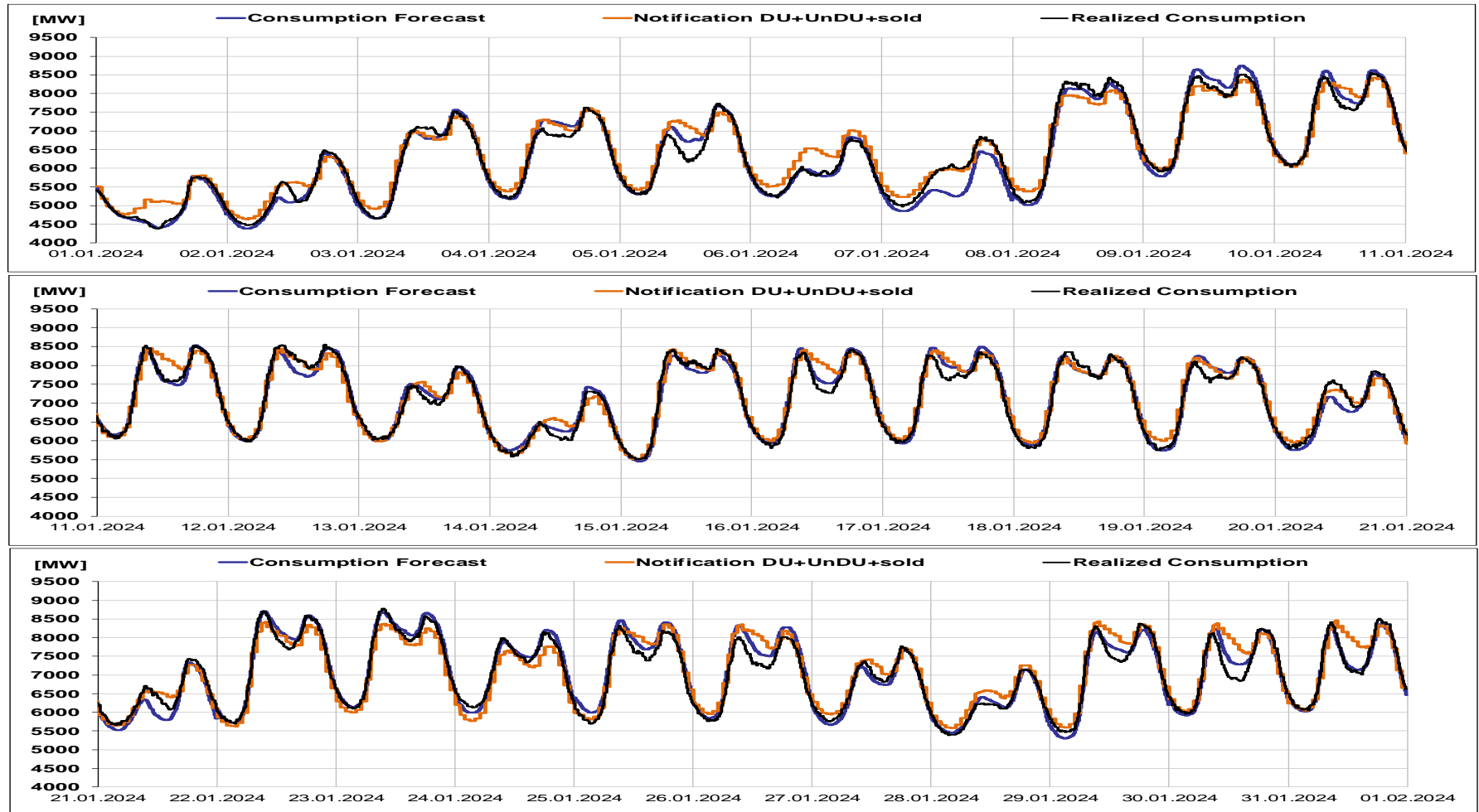


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Balancing Market

Realized consumption, forecast, notifications in D-1



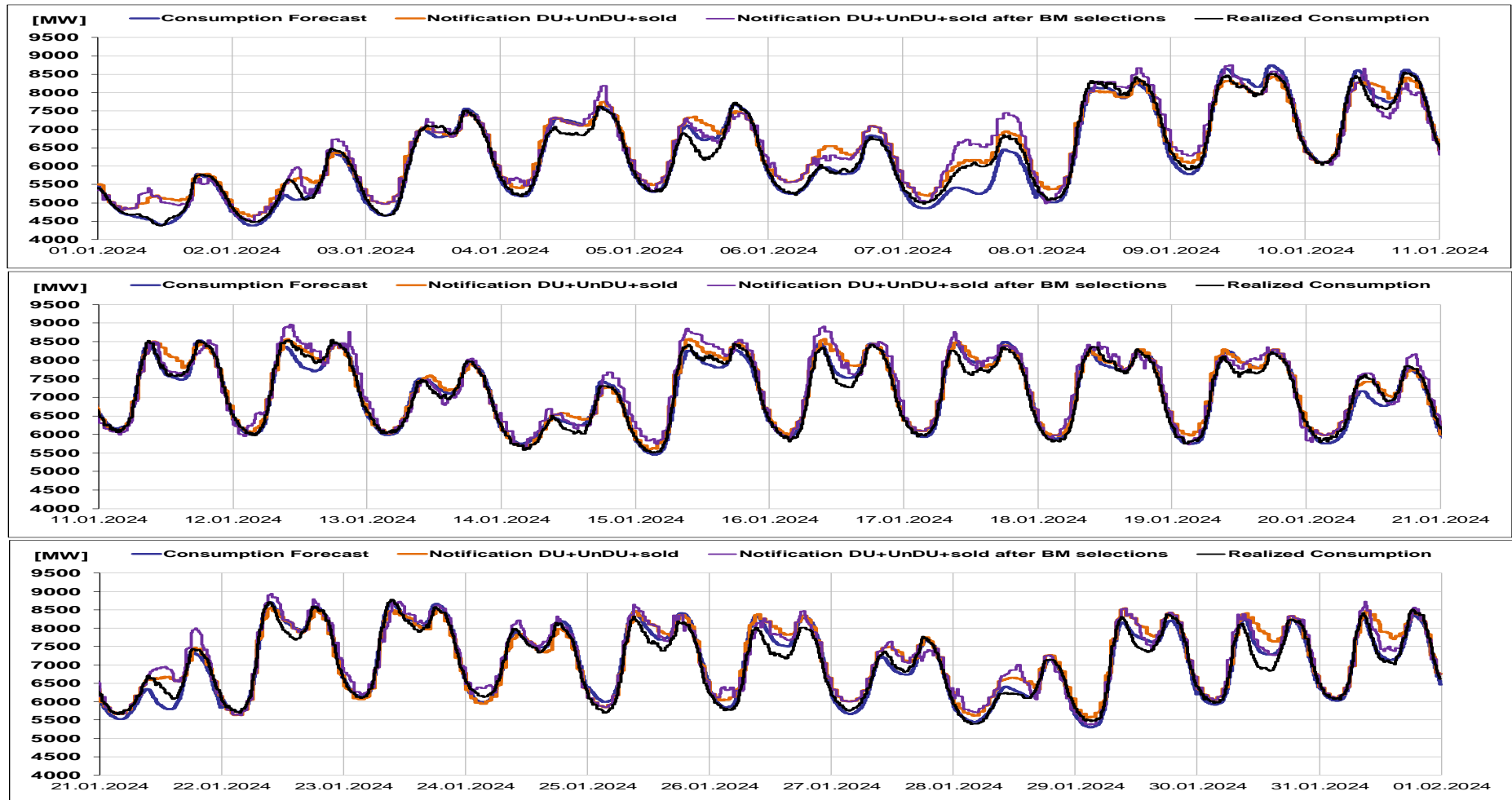


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Realized consumption, forecast, notifications, notifications after BM selections in D (end of delivery day)





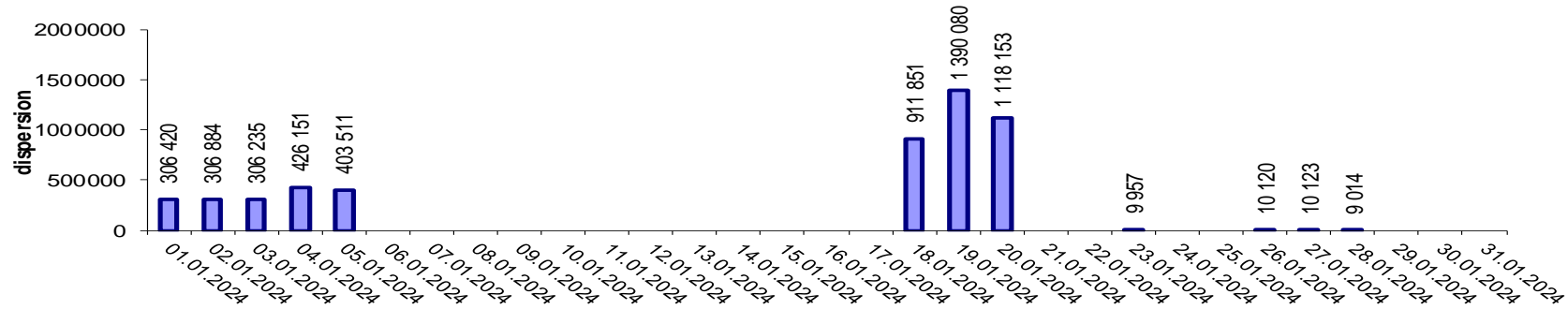
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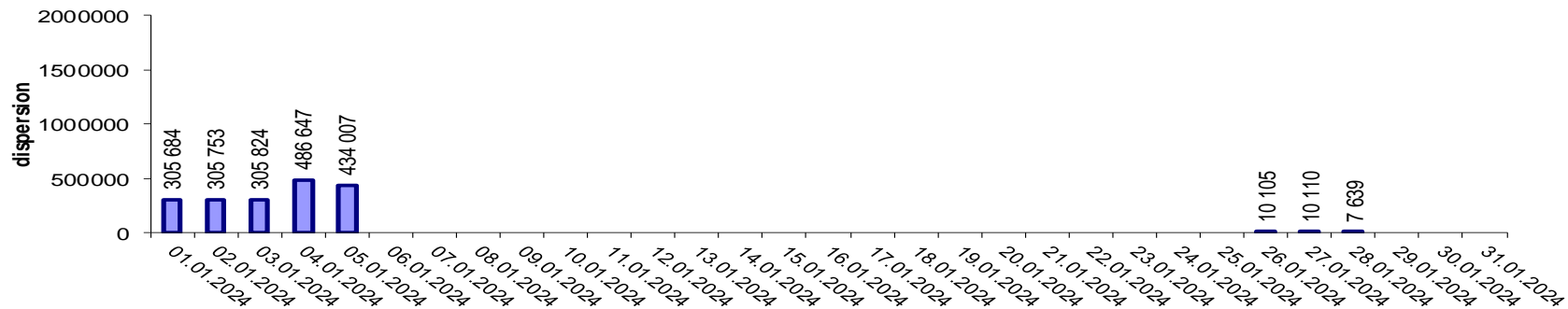
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Indicators – Price Volatility for Secondary Regulation

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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