



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

February 2023

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
NRA – National Regulatory Authority

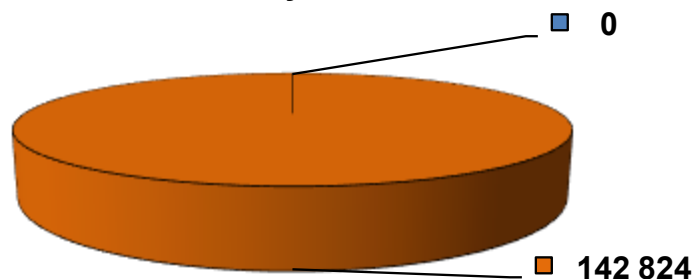
According to the Commercial Code, Transelectrica, the Romanian Transmission System Operator, operates and monitors the activity of 3 types of markets: Balancing Market, Ancillary Services Market and Market for Allocation of Cross-Border Capacities.

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).

The Balance Generation/Consumption

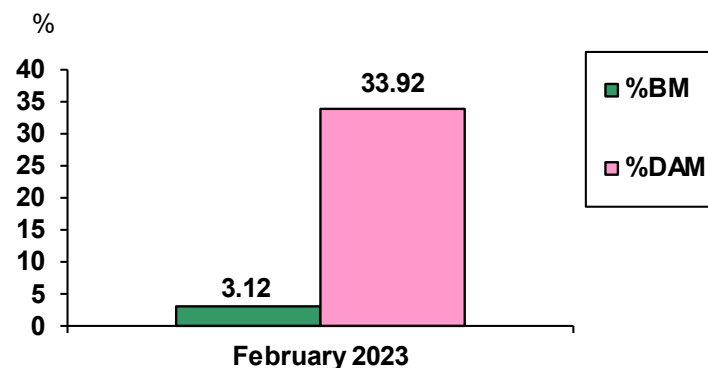
- The average monthly value of generated power was 7531 MW and the actual internal gross consumption was 6 818 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.88%**. Bigger differences were registered in case of consumption values resulted as the sum between notified production and total scheduled exchanges with the neighbouring power systems. In this case the standard monthly deviation value was **3.35%**. The greatest daily deviation regarding the notifications was registered on 19th of February (**7.21%**).
- The energy used in February 2023 for balancing the power system and congestion management was 142 824 MWh (with an average power of 213 MW, which means **3.12%** 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 February 2023 on Day Ahead Market was de 1 553 942 MWh (with an average power of 2 312 MW, which means **33.92%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 97 917 681 lei (with an average weighted price of 685.58 lei/MWh).

**Traded energy on BM
February 2023**



■ congestions BM ■ balancing - congestions BM

**Traded energy on BM and DAM related to the
gross internal consumption**



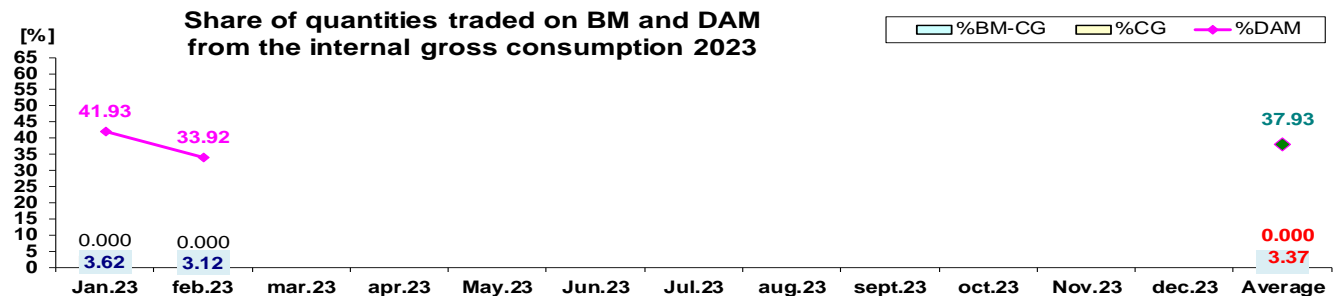
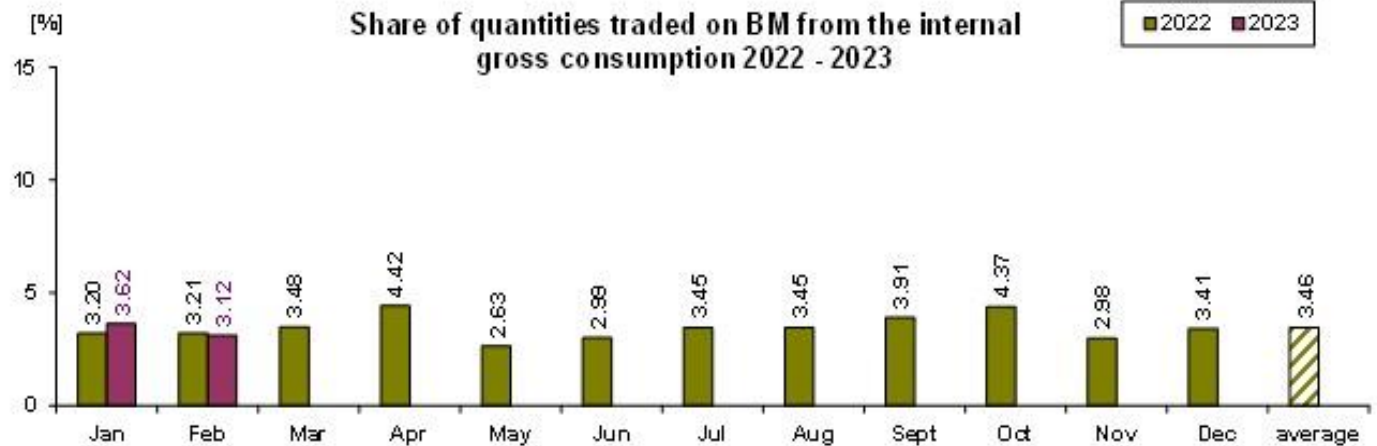


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The Balance Generation / Consumption

• 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).



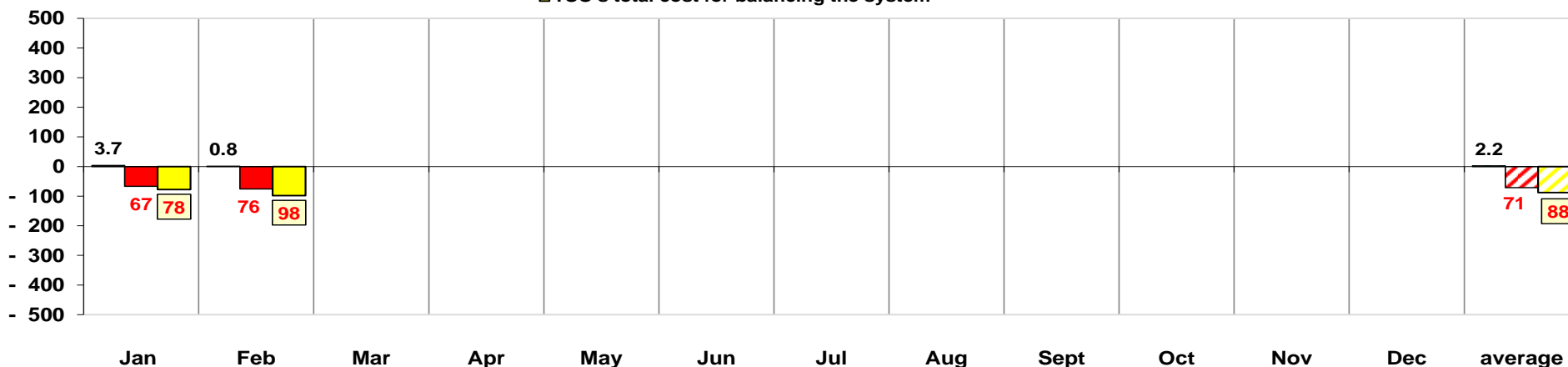
	2023												
	Jan.23	feb.23	mar.23	apr.23	May.23	Jun.23	Jul.23	aug.23	sept.23	oct.23	Nov.23	dec.23	Average
%BM	3.62	3.12											3.37
%DAM	41.93	33.92											37.93
%CG	0.000	0.000											0.000
%BM-CG	3.620	3.117											3.368
% outside BM	0.00	0.00											0.00

Balancing Energy Market Transactions

2023

[mil Lei]

- TSO's total income rights (+) for balancing energy delivered for upward and downward regulation
- TSO's total payment obligations (-) for balancing energy delivered for upward and downward regulation
- TSO's total cost for balancing the system



[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											2 217 771	4 435 542
	payments (-) prices < 0	-18 058 105	-13 750 607											-15 904 356	- 31 808 711
TSO's payment obligations / income rights for balancing energy delivered for upward regulation	payments (-) prices ≥ 0	-48 959 475	-62 157 235											-55 558 355	- 111 116 709
	incomes (+) prices < 0	0	0											0	0
TSO's total income rights (+) for balancing		3 671 254	764 288											2 217 771	4 435 542
TSO's total payment obligations (-) for		-67 017 580	-75 907 841											-71 462 710	- 142 925 421
TSO's total cost for balancing the system		-78 018 832	-97 917 681											-87 968 256	- 175 936 513
Value of transactions outside BM (with		0	0											0	0
Congestion Cost on BM		0	0											0	0
Congestion Cost outside BM		0	0											0	0

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

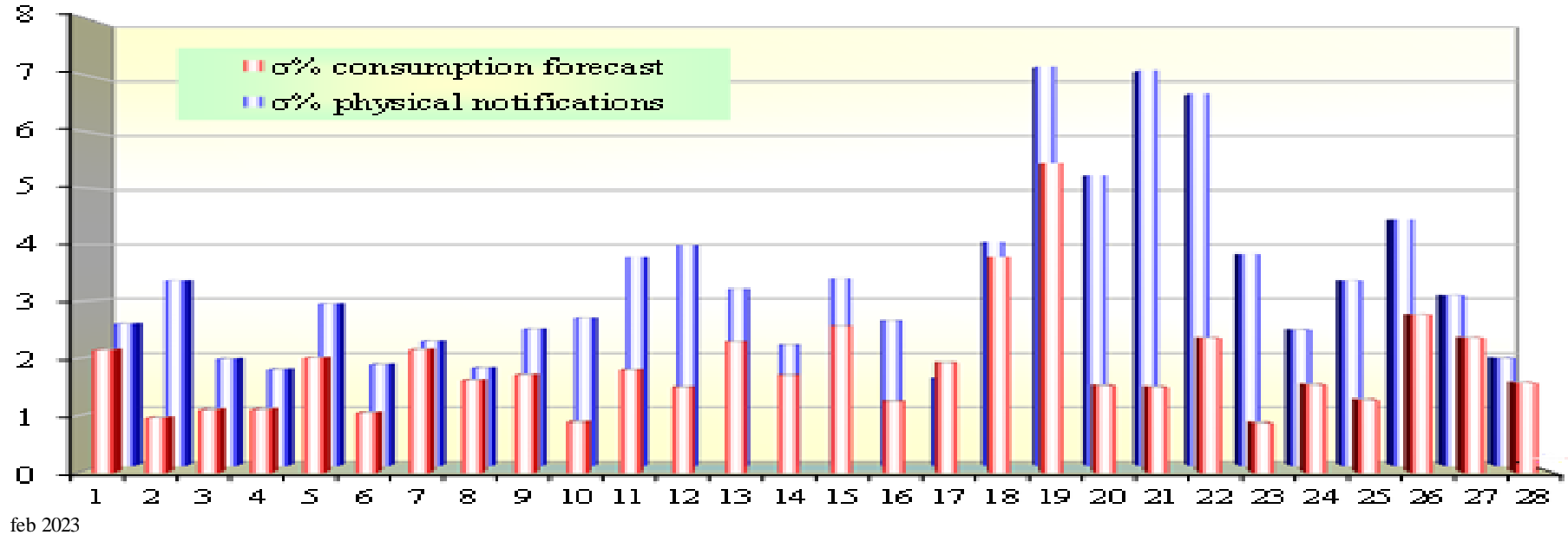


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Standard deviation of physical notifications and consumption forecast against the actual consumption in February 2023



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
σ% consumption forecast	2.15	0.96	1.10	1.11	2.01	1.05	2.16	1.62	1.71	0.88	1.80	1.50	2.30	1.70	2.57	1.25	1.93	3.78	5.42	1.52	1.50	2.36	0.87	1.54	1.27	2.77	2.37	1.57
σ% physical notifications	2.57	3.35	1.93	1.74	2.93	1.84	2.26	1.77	2.47	2.67	3.78	3.99	3.20	2.18	3.39	2.62	1.58	4.05	7.21	5.25	7.14	6.72	3.83	2.46	3.35	4.46	3.08	1.94

σ_{average% consumption forecast} = 1.88

σ_{average % physical notifications} = 3.35

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

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Balancing energy – Selected prices and quantities

- At the beginning of the month on the Balancing Market operated 78 BRPs, 89 market participants, holding 177 commercially operating dispatchable units. Starting with 17th of February 2023, according to NRA Order no 213/2020, with subsequent amendments and completions, BRP NOVA POWER & GAS SOLAR PRODUCTION (PROBE) (30XRONPGSP-----8) was permanently withdrawn from BM as a result of the termination of the trial period at the solar production unit NERVIA.
- During the month, dispatchable units BRAZ8 (30WBRAZBRAZ8---N) (10th of February) and BRAZ5 (30WBRAZBRAZ5---1) (16th of February), were registered in the balancing market platform, having as BMP TERMO PLOIESTI SRL (60X000000000132H).
- Starting with 15th of February 2023, dispatchable unit NBAL1 (30W-NBAL-----K) joined BMP NICOLAE BALCESCU REGENERABILE SRL (30XRONICBALREG-9), BMP S.C. GENERAL CONCRETE CERNAVODA SRL (30XROGENCONCRETQ) was permanently removed from BMP list.

February 2023

Downward Regulation

	Prices			Quantities			Participants					
	Weighted Average	Maximum	Minimum	Selected	Actually Delivered	Deviation	C1	C3	C1	C3	HHI	HHI (actually delivered)
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(selected)	(actually delivered)
Secondary	-295.88	0.10	-300.00	41086.13	41086.13	0.00%	3	46.71%	100%	46.71%	100%	3768
Fast Tertiary	-13.76	255.00	-200.00	60796.38	58655.48	3.52%	8	58.75%	92.93%	59.78%	92.97%	4366
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-
				101882.52	99741.61	2.10%						

Upward Regulation

	Prices			Quantities			Participants					
	Weighted Average	Maximum	Minimum	Selected	Actually Delivered	Deviation	C1	C3	C1	C3	HHI	HHI (actually delivered)
	[lei/MWh]	[lei/MWh]	[lei/MWh]	[MWh]	[MWh]	[%]	Number	(selected)	(actually delivered)	(selected)	(selected)	(actually delivered)
Secondary	2018.25	3000.00	2000.00	15563.95	15563.95	0.00%	3	47.44%	100%	47.44%	100%	3767
Fast Tertiary	1116.94	1855.74	487.72	28333.53	27518.77	2.88%	6	58.98%	95.89%	59.68%	95.84%	4575
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-
				43897.47	43082.71	1.86%						



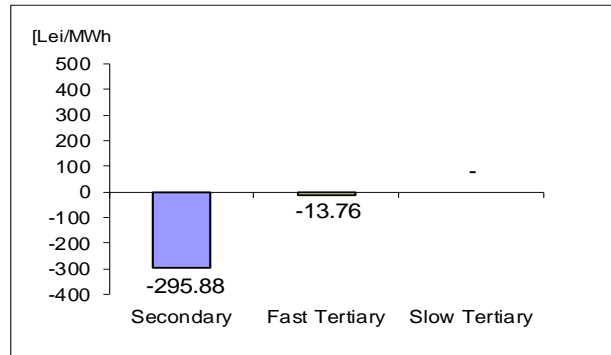
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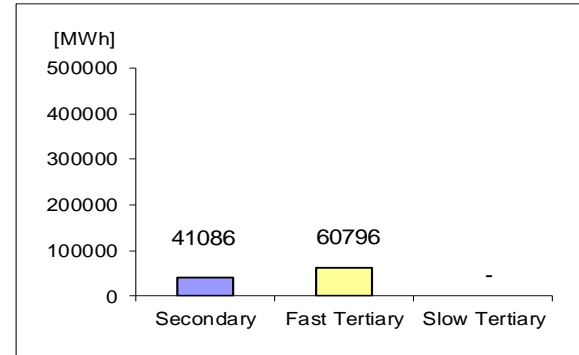
Balancing energy – Selected prices and quantities in February 2023

February 2023

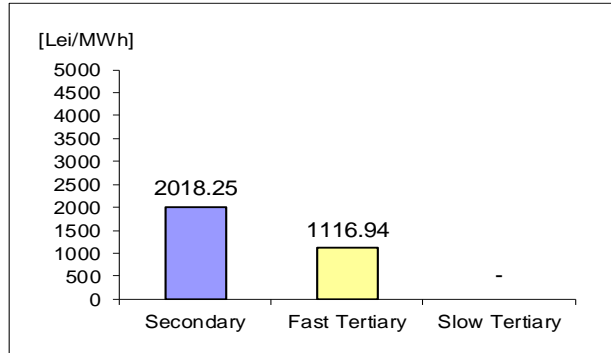
Downward regulation - average price [lei/MWh]



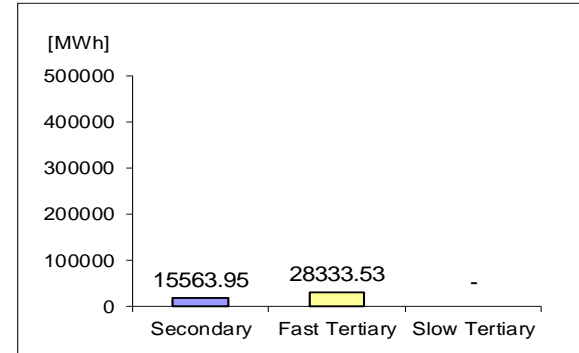
Downward regulation - selected quantities



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 .

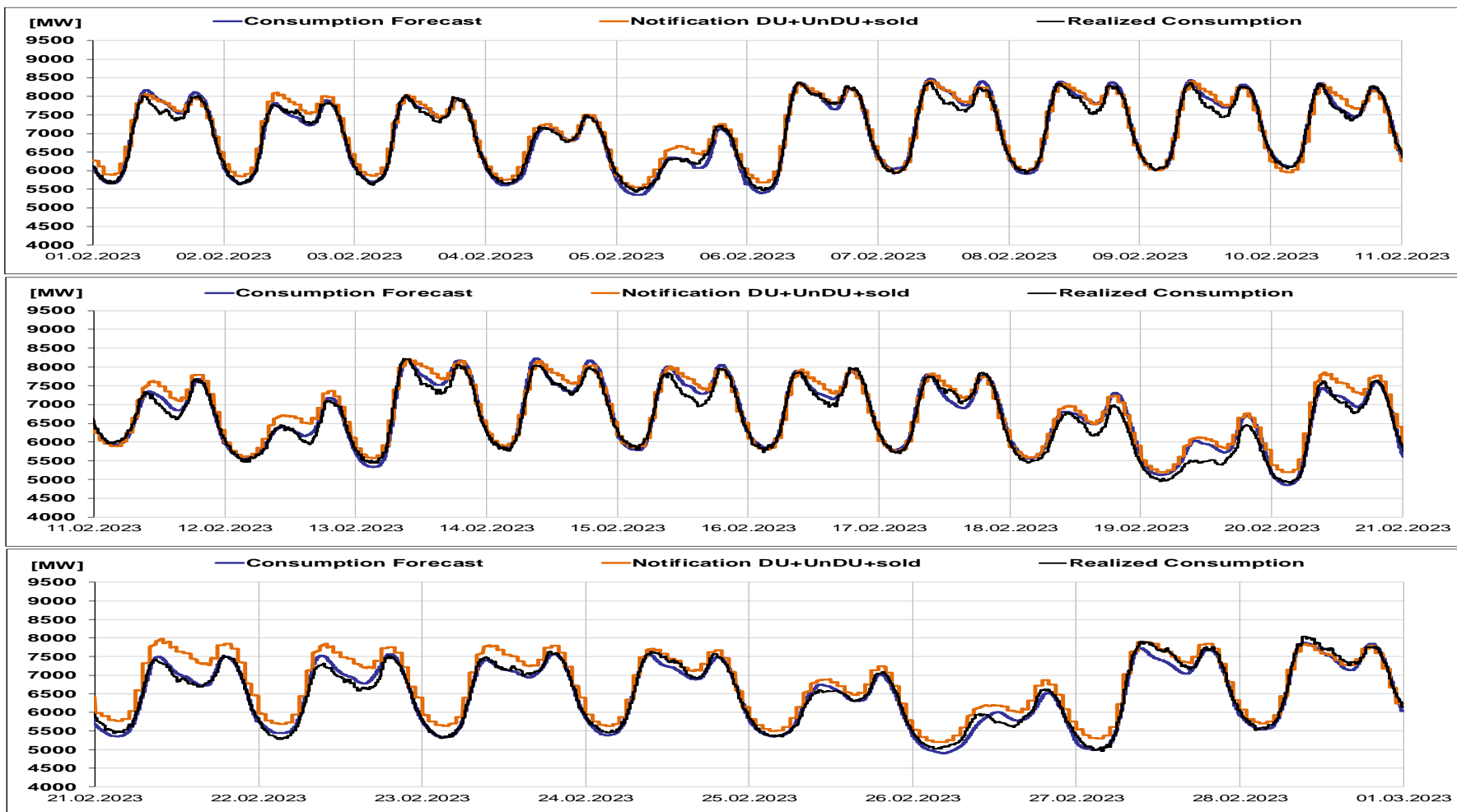


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Realized consumption, forecast, notifications in D-1



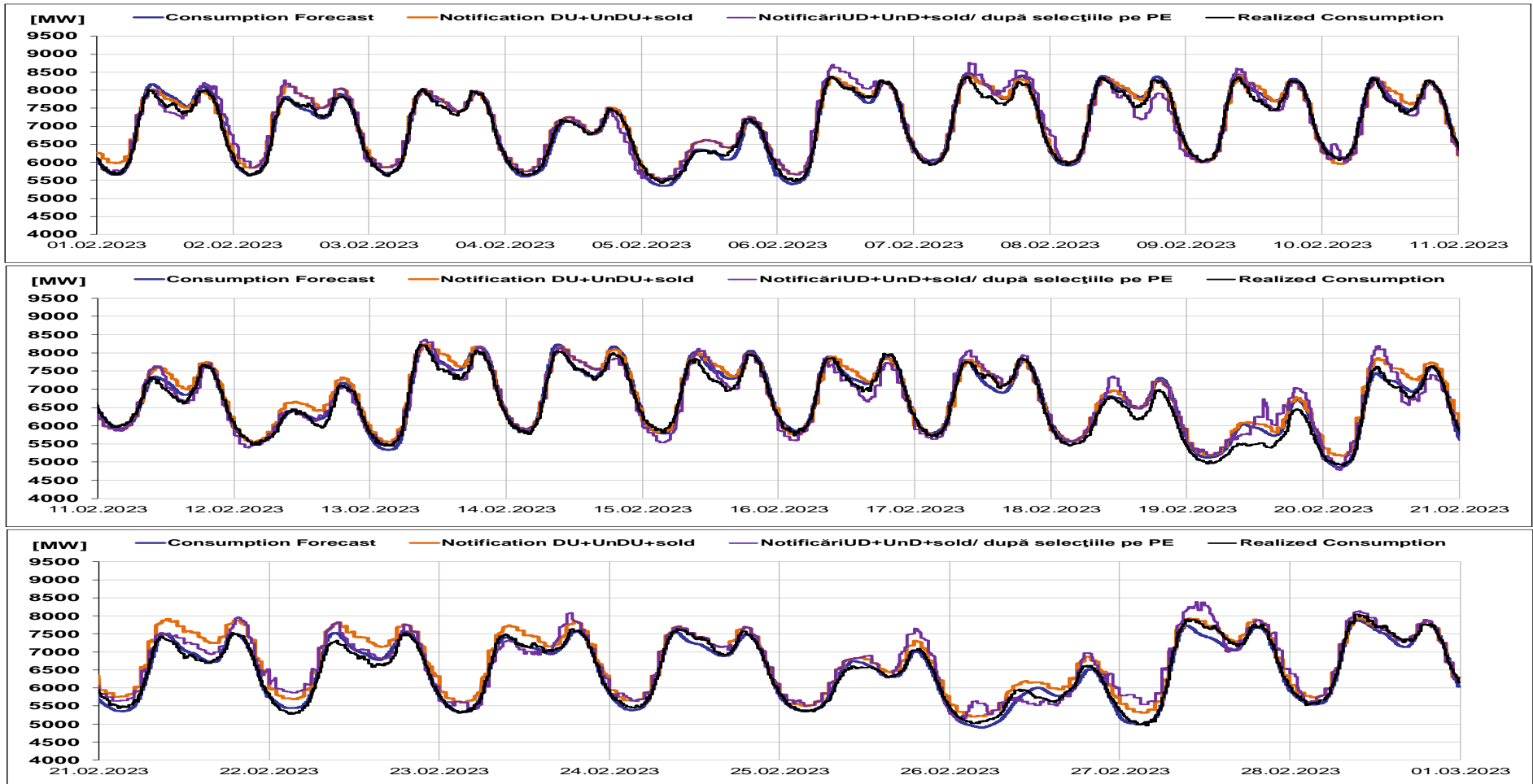


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Balancing Market

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





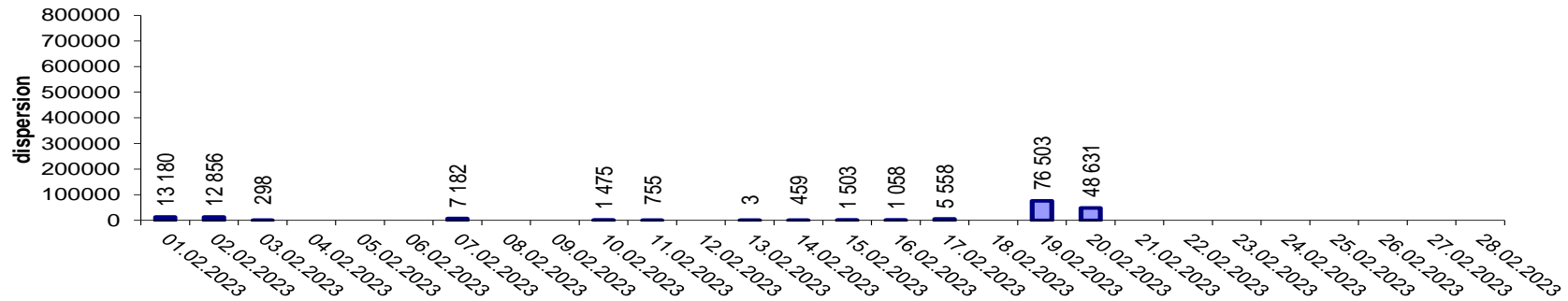
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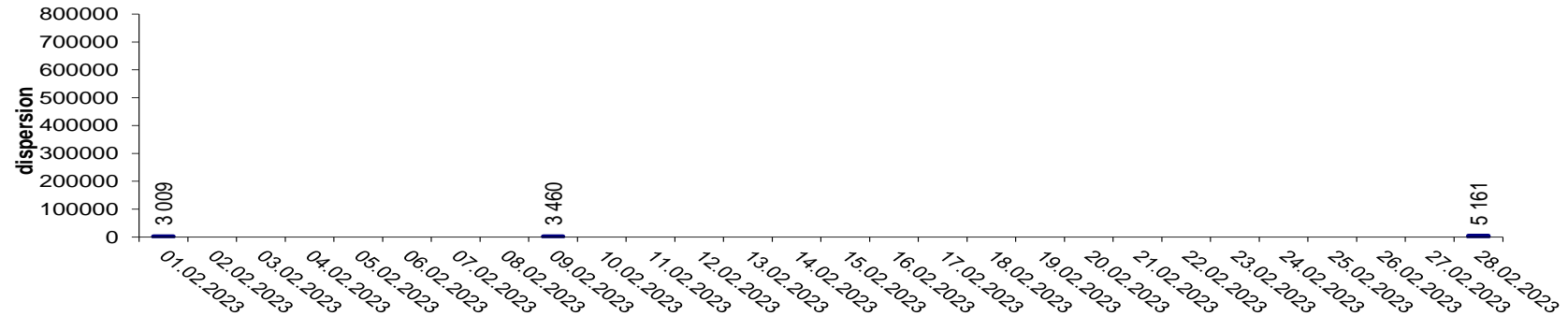
Balancing Market

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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