



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

March 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 127 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:
 - ✓ KHR SOLAR ONE (PROBE) (30XRO-KHR-P----E) (11.03) following the start of the trial period for the solar production unit KHR_PROBE;
 - ✓ RIENZA (PROBE) (30XRO-RIENZA-P-B) (11.03), following the start of the trial period for the solar production unit RIENZA_PROBE;
 - ✓ FRADUSTA (PROBE) (30XROFRADUSTA-PH) (15.03), following the start of the trial period for the solar production unit PERIS1_PROBE;
 - ✓ LITEGOSA (PROBE) (30XROLITEGOSA-PQ) (15.03), following the start of the trial period for the solar production unit PERIS2_PROBE;
 - ✓ MELICON POWER (PROBE) (30XROMELICONP-PE) (16.03), following the start of the trial period for the solar production unit MELICON_PROBE;
 - ✓ RAAL (PROBE) (30XRORAAL-----PL) (21.03), following the start of the trial period for the solar production unit ALPHAPB_PROBE;
 - ✓ MONSSON (PROBE) (30XROMONSSONP--F), following the start of the trial period for storage unit GALBIORI2_PROBE and for the solar production unit GALBIORI3_PROBE;
 - exited BM the following BRPs:
 - ✓ FRAVORT(PROBE) (30XROFRAVORT---H) (01.03) as a result of the termination of the testing period for the solar production F_ROSIORI;
 - ✓ CTPARK ETA (PROBE) (30XRO-CTPARKETA6) (15.03) as a result of the termination of the testing period for the solar production ETA1+2_PROBE;



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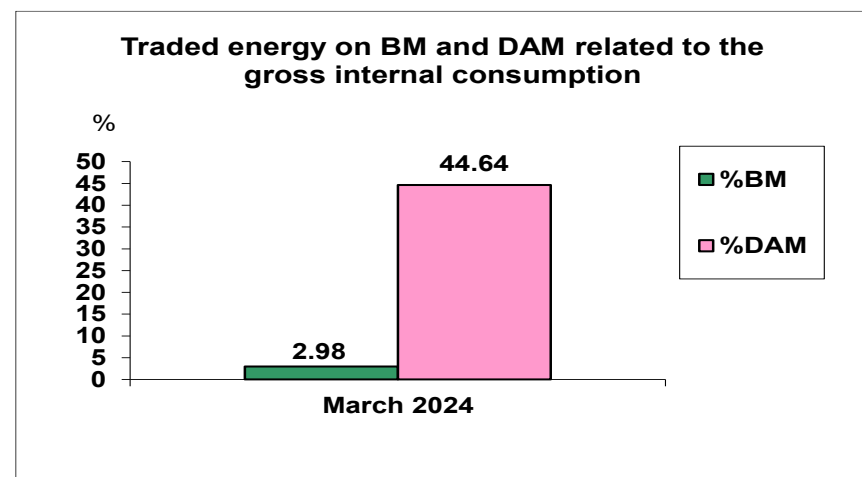
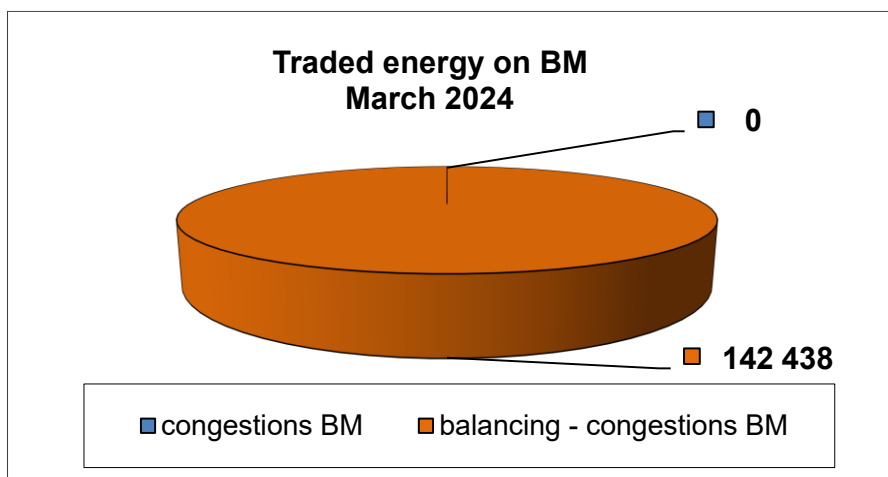
- ✓ ENERGO NATUR DRAGHINEASCA (PROBE) (30XRO-ENERGONAT1) (16.03) as a result of the termination of the testing period for the solar production RASCAETI_PROBE;
- ✓ NEXTE RO PROJECT ALPHA (30XRONEXTEALPHAB) (21.03) as a result of the termination of the testing period for the solar production ALPHAPB_PROBE.

➤ During the month the following modifications were done:

- ✓ starting with 3rd of March, dispatchable production unit UAGNOVA (30W-UAGNOVA----1) was registered with BMP NOVA POWER & GAS (fost TEN GAZ) (30XROTENGGAZ----B) and BRP ENEL-CIGA (30XROENEL-CIGA-Z), unit resulting from the aggregation of dispatchable units CEG1CT (30W-CEG1CT-----T), CEG2CT (30W-CEG2CT-----K), CEG4 (30W-CEG4CT-----2) and CEG5 (30W-CEG5CT-----U);
- ✓ starting with 7th of March, undispachable solar production unit ROSIORI was registered to BRP CINTAENERGY (30XROCINTAEN---N) portfolio;
- ✓ starting with 15th of March, undispachable solar production unit CTPARK was registered to BRP PRE ENEL-CIGA (30XROENEL-CIGA-Z) portfolio;

The Balance Generation/Consumption

- The average monthly value of generated power was 6 717 MW and the actual internal gross consumption was de 6 440 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 2.72%. 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 **8.05%**. The greatest daily deviation regarding the notifications was registered on the 31st of March (**20.87%**).
- The energy used in March 2024 for balancing the power system and congestion management was 142 438 MWh (with an average power of 192 MW, which means 2.98% from the internal gross consumption).
- The energy used in March 2024 on Day Ahead Market was de 2 136 140 MWh (with an average power of 2 875 MW, which means 44,64% from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 296 279 443 lei (with an average weighted price of 2 080,06 lei/MWh).





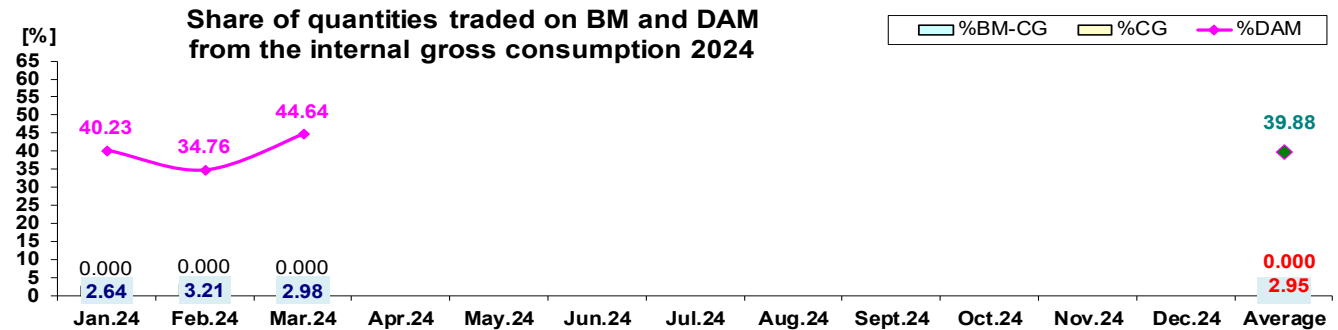
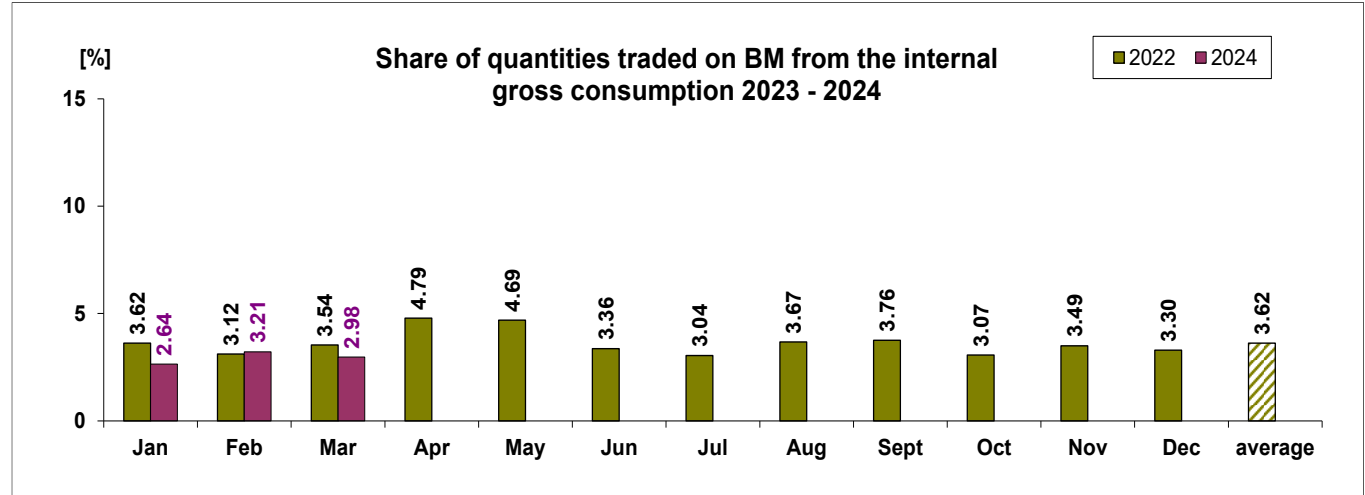
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Balancing Market

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	3.21	2.98										2.95
%DAM	40.23	34.76	44.64										39.88
%CG	0.000	0.000	0.000										0.0000
%BM-CG	2.644	3.215	2.977										2.945
% outside BM	0.00	0.00	0.03										0.01



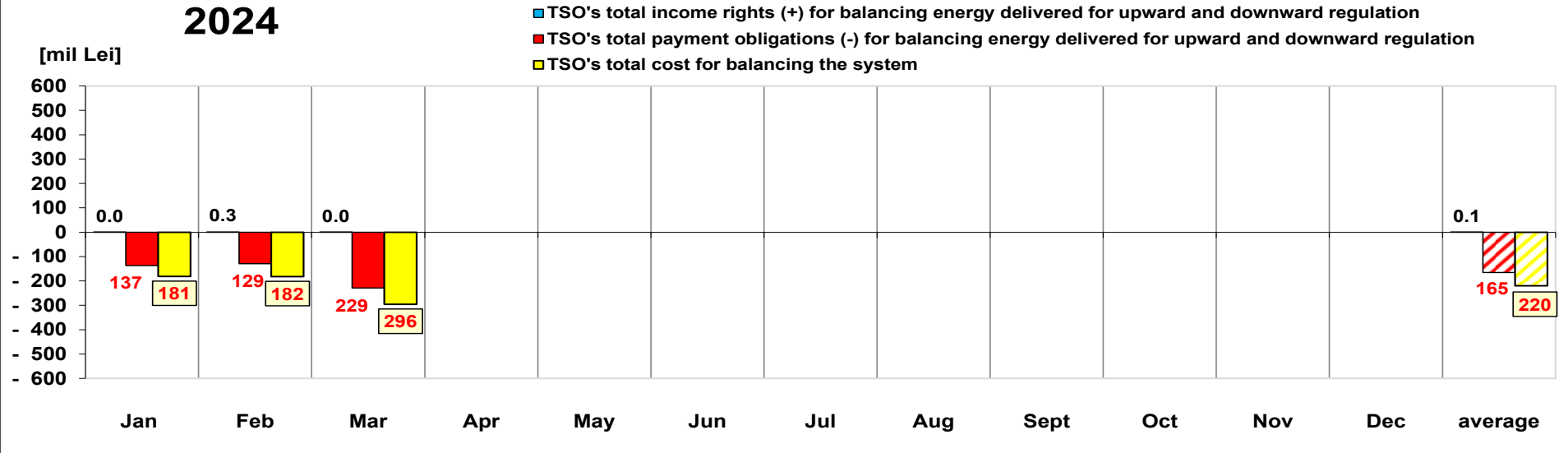
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Balancing Energy Market Transactions

2024

[mil Lei]



[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	18 140	278 638	35 910										110 896	332 689
	payments (-) prices < 0	-35 668 475	-76 223 402	-173 433 646										-95 108 508	- 285 325 523
TSO's payment obligations / income rights for balancing energy delivered for upward regulation	payments (-) prices ≥ 0	-101 648 720	-52 902 529	-55 602 939										-70 051 396	- 210 154 188
	incomes (+) prices < 0	0	0	0										0	0
TSO's total income rights (+) for balancing		18 140	278 638	35 910										110 896	332 689
TSO's total payment obligations (-) for		-137 317 196	-129 125 931	-229 036 585										-165 159 904	- 495 479 711
TSO's total cost for balancing the system		-181 297 377	-182 475 562	-296 213 092										-219 995 343	- 659 986 030
Value of transactions outside BM (with Congestion Cost on BM)		0	0	0										0	0
Congestion Cost outside BM		0	0	0										0	0

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

Public

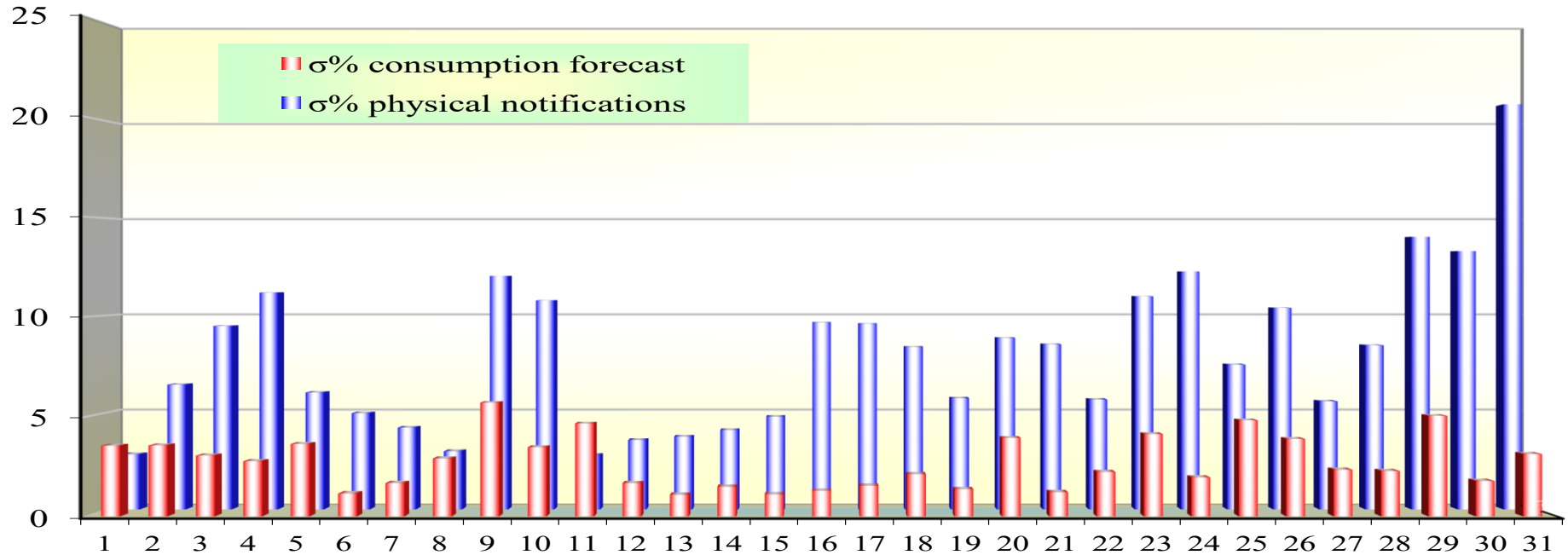


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Standard deviation of physical notifications and consumption forecast against the actual consumption in March 2024



mar 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	3.54	3.56	3.04	2.76	3.63	1.14	1.66	2.90	5.70	3.46	4.65	1.66	1.08	1.48	1.10	1.28	1.54	2.11	1.36	3.92	1.21	2.22	4.12	1.94	4.81	3.87	2.34	2.27	5.03	1.77	3.12
σ% physical notifications	2.83	6.43	9.45	11.17	6.02	4.95	4.21	2.99	12.03	10.76	2.79	3.57	3.74	4.08	4.77	9.62	9.56	8.37	5.72	8.84	8.50	5.66	10.98	12.26	7.46	10.38	5.56	8.46	14.05	13.31	20.87

σ_{average% consumption forecast} = 2.72

σ_{average % physical notifications} = 8.05

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

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Balancing energy – Selected prices and quantities in March 2024

March 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	-3411.49	-300.00	-8000.00	28700.97	28700.97	0.00%	5	61.92%	95.78%	61.92%	95.78%	4424
Fast Tertiary	-934.46	50.00	-9000.00	83256.62	80847.74	2.89%	18	43.89%	76.99%	44.46%	77.32%	2642	2683
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				111957.60	109548.71	2.15%							

Upward Regulation

	<div>Weighted Average</div>				<div>Actually Delivered</div>	<div>Deviation</div>							
		<div>Maximum</div>	<div>Minimum</div>	<div>Selected</div>			C1	C3	C1	C3	HHI	HHI	
	<div>[lei/MWh]</div>	<div>[lei/MWh]</div>	<div>[lei/MWh]</div>	<div>[MWh]</div>	<div>[MWh]</div>	<div>[%]</div>	Number	<div>(selected)</div>	<div>(actually delivered)</div>	<div>(selected)</div>	<div>(actually delivered)</div>		
Secondary	3395.79	11000.00	549.00	11410.45	11410.45	0.00%	5	62.48%	96.65%	62.48%	96.65%	4495	4495
Fast Tertiary	785.18	1270.62	0.00	21968.00	21478.76	2.23%	7	79.53%	96.86%	79.82%	96.89%	6479	6522
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				33378.45	32889.21	1.47%							

March 2024

	Transactions outside BM (financial compensation)			Participants
	Selected [MWh]	Actually Delivered [MWh]	Undelivered [%]	
Fast Tertiary Downward Regulation	1569.12	1520.01	3.13%	9



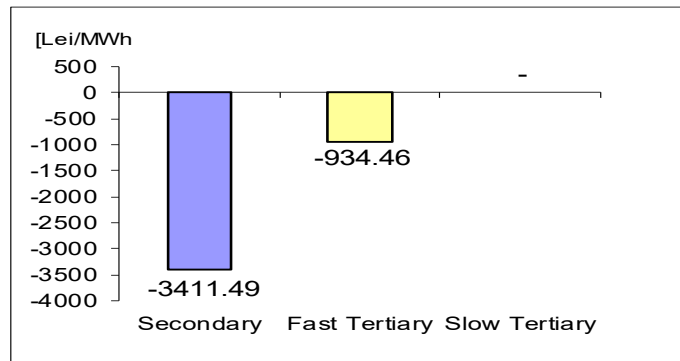
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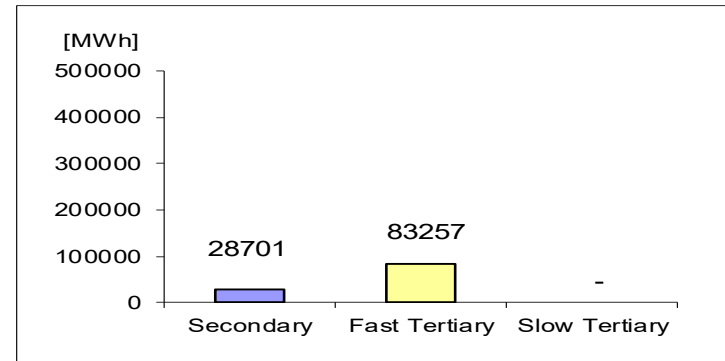
Balancing energy – Selected prices and quantities in March 2024

March 2024

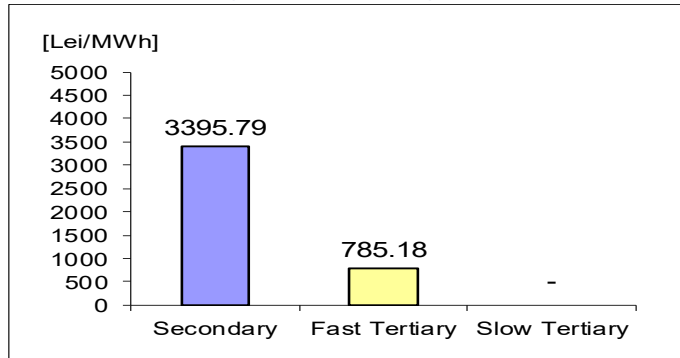
Downward regulation - average price [lei/MWh]



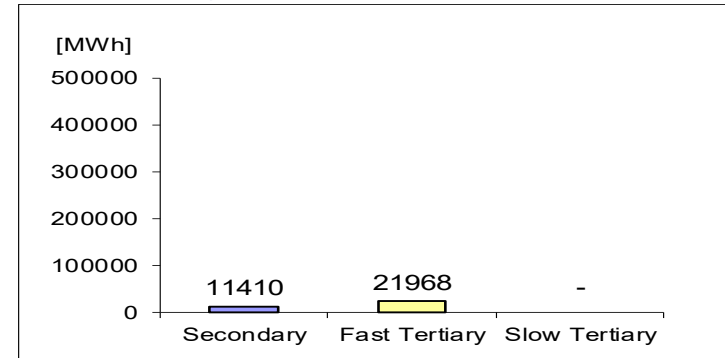
Downward regulation - selected quantities



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 .

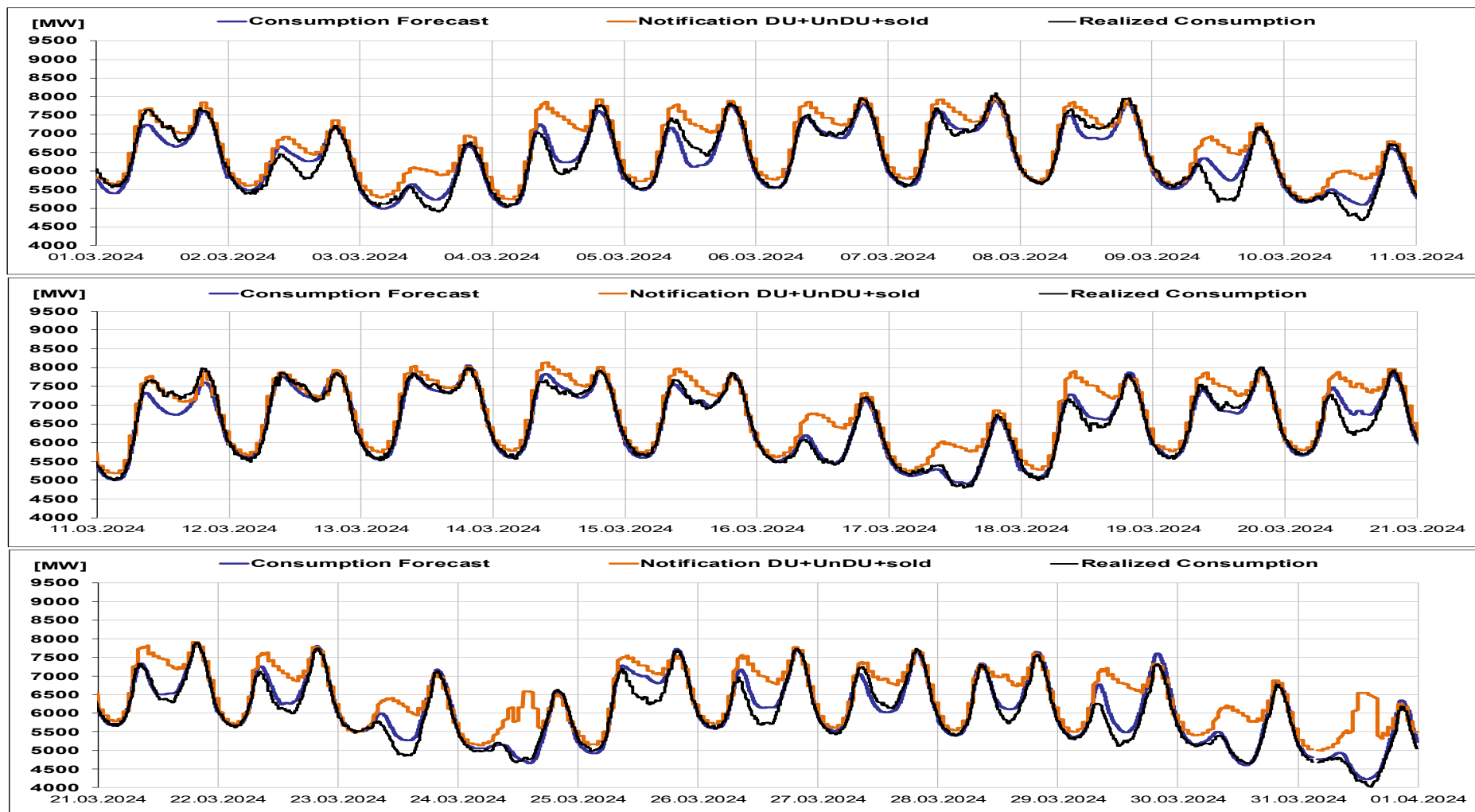


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Realized consumption, forecast, notifications in D-1



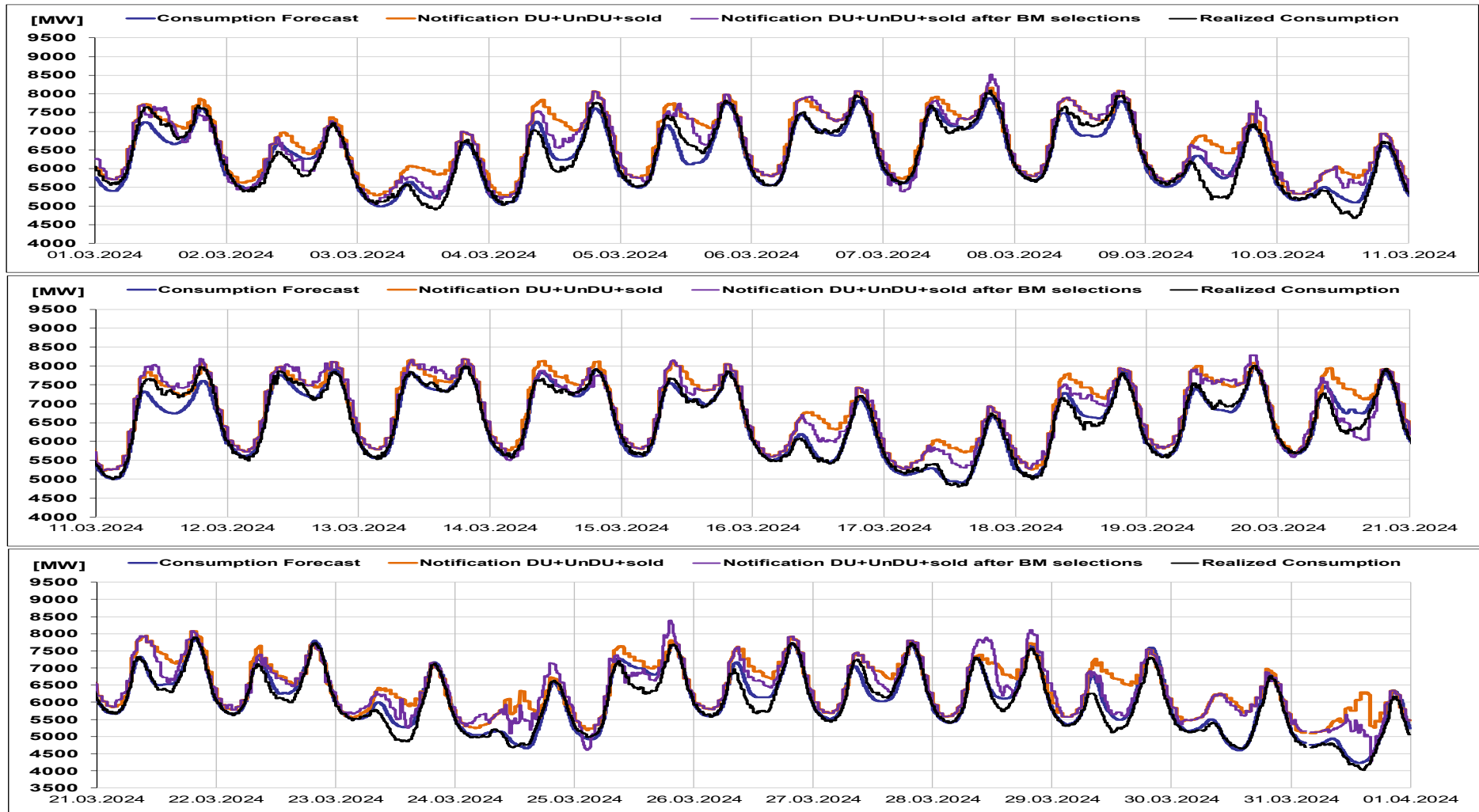


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Balancing Market

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





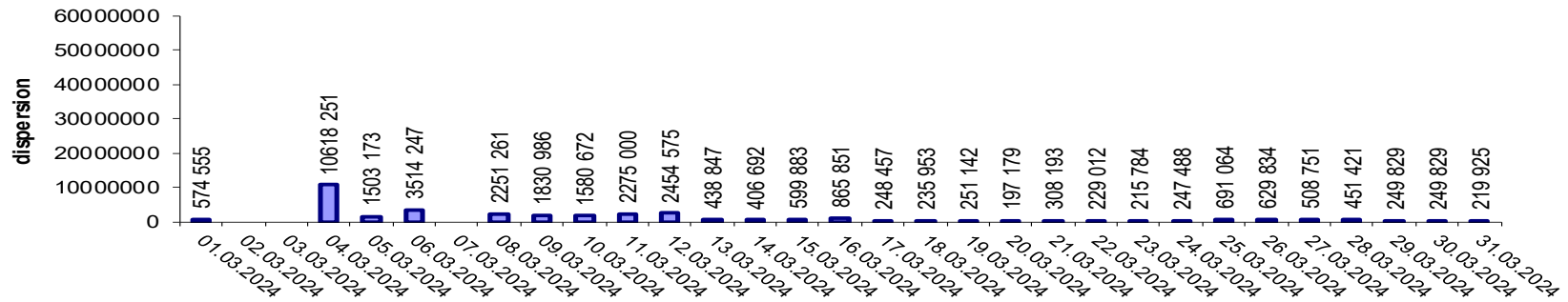
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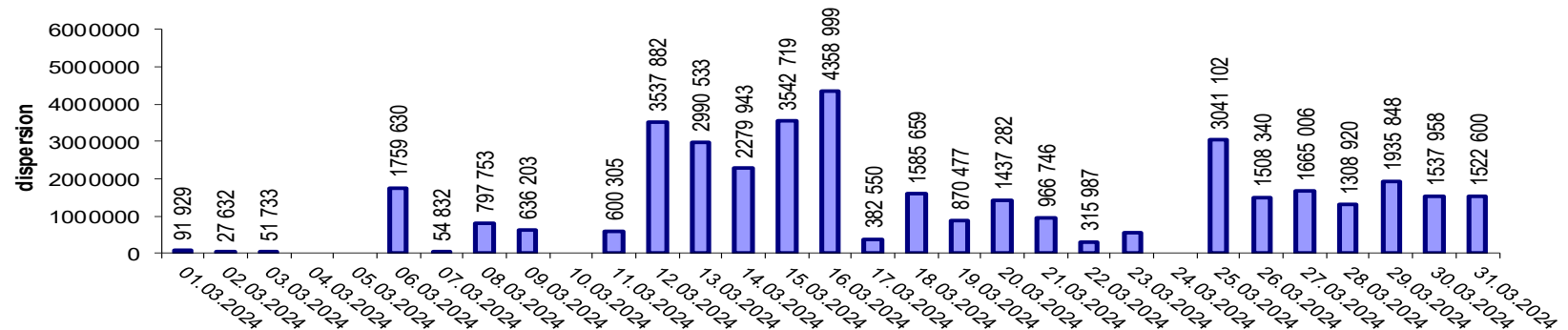
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Indicators – Price Volatility for Secondary Regulation

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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