



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

July 2022

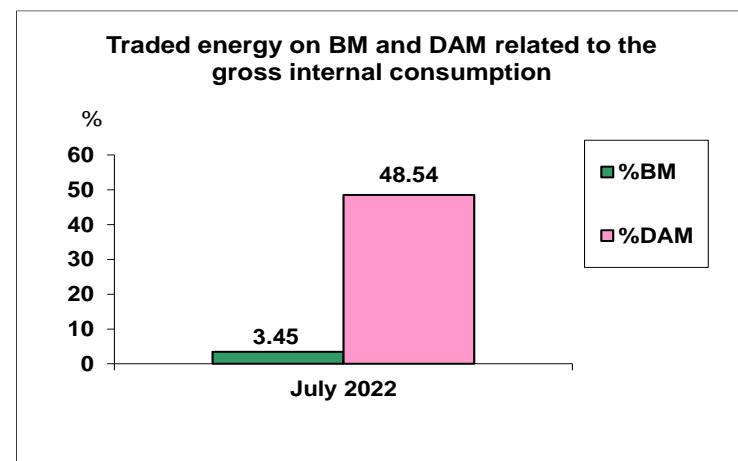
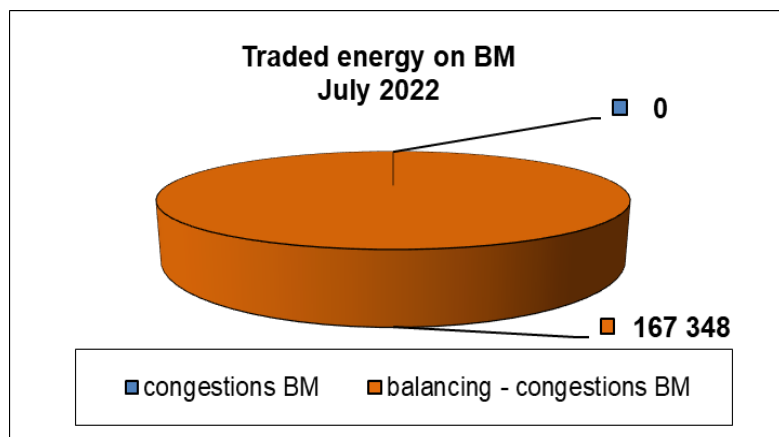
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
BMP – Balancing Market Participant
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching 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 6 183 MW and the actual internal gross consumption was 6 515 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.66%**. 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 **3.15%**. The greatest daily deviation regarding the notifications was registered on the 31th of July (**5.98%**).
- The energy used in July 2022 for balancing the power system and congestion management was 167 348 MWh (with an average power of 225 MW, which means **3.45%** from the internal gross consumption).
- There were no transactions on congestion management nor outside BM (with financial compensation).
- The energy used in July 2022 on Day Ahead Market was de 2 352 800 MWh (with an average power of 3 162 MW, which means **48.54%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 265 197 031 lei (with an average weighted price of 1 584.71 lei/MWh).





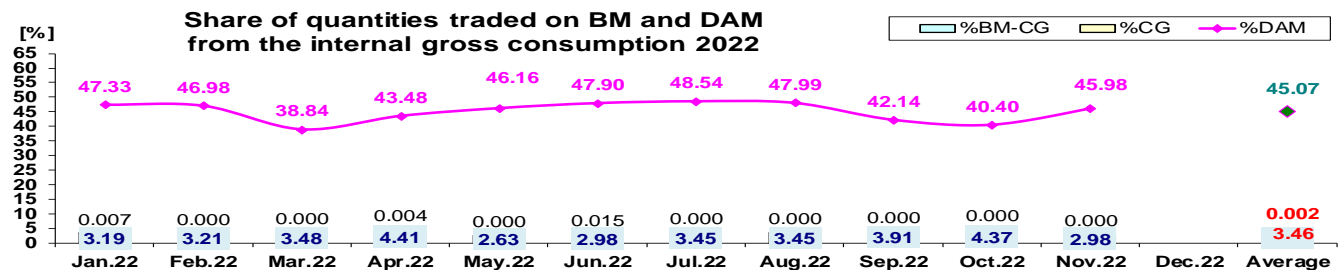
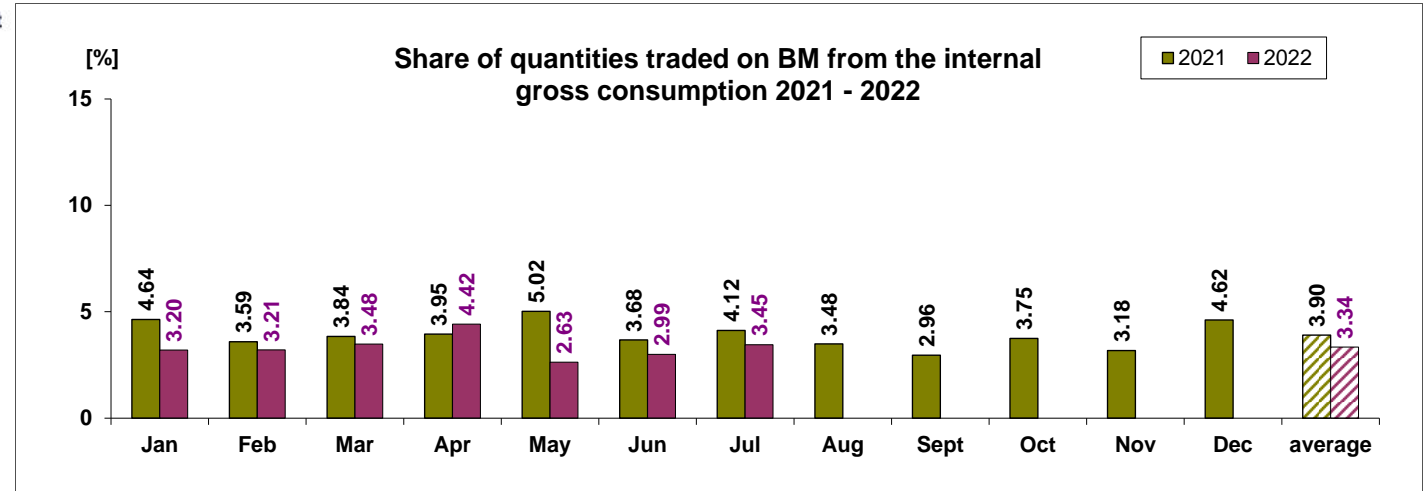
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Balancing Market

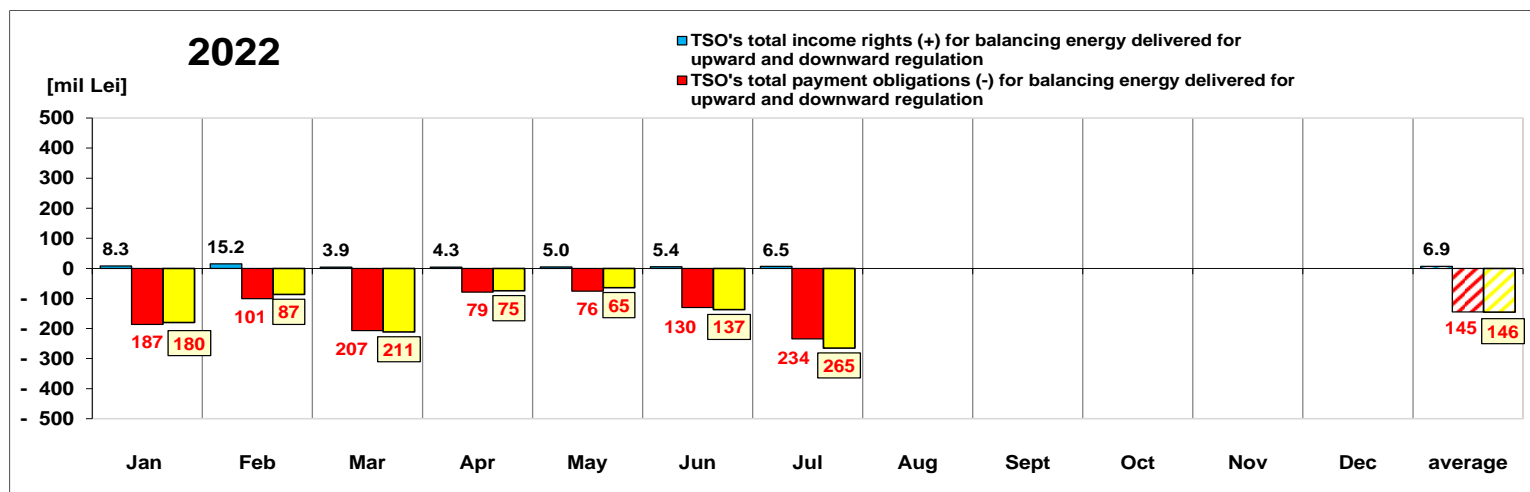
The Balance Generation / Consumption

• 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).



	2022												
	Jan.22	Feb.22	Mar.22	Apr.22	May.22	Jun.22	Jul.22	Aug.22	Sep.22	Oct.22	Nov.22	Dec.22	Average
%BM	3.20	3.21	3.48	4.42	2.63	2.99	3.45						3.34
%DAM	47.33	46.98	38.84	43.48	46.16	47.90	48.54						45.60
%CG	0.007	0.000	0.000	0.004	0.000	0.015	0.000						0.0037
%BM-CG	3.191	3.206	3.479	4.412	2.631	2.979	3.452						3.336
% outside BM	0.00	0.00	0.00	0.00	0.00	0.00	0.00						0.00

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	8 344 244	15 164 350	3 932 020	4 322 327	4 990 345	5 393 527	6 457 040						6 943 407	48 603 852
	payments (-) prices < 0	- 40 999	- 12 132	- 96 136	- 131 045	- 1 648	- 22 991	- 374						- 43 618	- 305 325
TSO's payment obligations / income rights for balancing energy delivered for upward regulation	payments (-) prices ≥ 0	-186 598 444	-100 703 503	-206 992 197	-78 969 465	-75 510 505	-130 258 379	-234 452 122						-144 783 516	-1013 484 615
	incomes (+) prices < 0	0	0	0	0	0	0	0						0	0
TSO's total income rights (+) for balancing energy delivered for		8 344 244	15 164 350	3 932 020	4 322 327	4 990 345	5 393 527	6 457 040						6 943 407	48 603 852
TSO's total payment obligations (-) for balancing energy delivered for		-186 639 443	-100 715 635	-207 088 333	-79 100 510	-75 512 153	-130 281 369	-234 452 496						-144 827 134	-1013 789 940
TSO's total cost for balancing the system		-180 209 876	-86 965 620	-211 125 690	-74 719 809	-64 511 950	-136 923 991	-265 197 031						-145 664 852	-1019 653 967
Value of transactions outside BM (with		0	0	0	0	0	0	0						0	0
Congestion Cost on BM		- 157 055	0	- 3 224	- 30 924	0	- 29 640	0						- 31 549	- 220 843
Congestion Cost outside BM		0	0	0	0	0	0	0						0	0

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

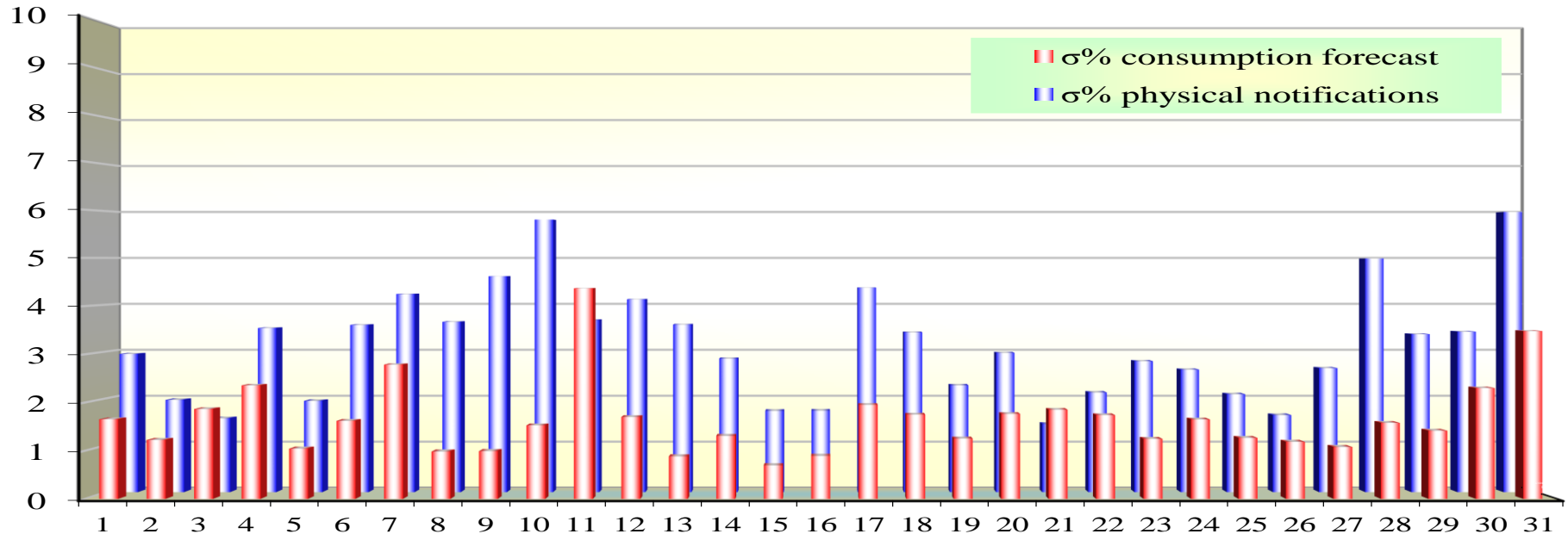


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Balancing Market

Standard deviation of physical notifications and consumption forecast against the actual consumption in July 2022



July 2022

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	1.65	1.22	1.86	2.35	1.04	1.62	2.79	0.98	0.99	1.53	4.37	1.70	0.88	1.31	0.69	0.89	1.95	1.75	1.25	1.76	1.85	1.74	1.24	1.65	1.26	1.18	1.08	1.58	1.41	2.30	3.48
σ% physical notifications	2.95	1.97	1.57	3.50	1.95	3.57	4.23	3.63	4.61	5.82	3.67	4.12	3.58	2.85	1.73	1.74	4.36	3.41	2.28	2.97	1.45	2.13	2.80	2.61	2.09	1.64	2.65	4.99	3.37	3.43	5.98

σ_{average} % consumption forecast = 1.66

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

σ_{average} % physical notifications = 3.15

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

Public

Balancing Market

Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 70 BRPs, 91 market participants, holding 180 commercially operating dispatchable units. Starting with the 15st of July 2022, the dispatchable production unit IZVIN (30W-IZVIN-----Q) entered in BMP VATECH CONSULTING S.R.L. (30XRO-VATECH---J) and BPM URDEL ENERGY S.R.L. (30XROURDEL-----4) was withdrawn from the status of BMP.

July 2022

Downward Regulation

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)	(selected)	(actually delivered)
Secondary	0.09	0.10	-10.00	33958.70	33958.70	0.00%	3	65.74%	100%	65.74%	100%	5419	5419
Fast Tertiary	130.05	250.00	0.10	51418.94	49642.38	3.46%	5	36.39%	95.57%	35.51%	95.71%	3086	3083
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				85377.64	83601.08	2.08%							

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)	(selected)	(actually delivered)
Secondary	3576.23	5000.00	800.00	22715.21	22715.21	0.00%	3	67.92%	100%	67.92%	100%	5612	5612
Fast Tertiary	2512.35	4248.50	1146.00	62169.51	61031.57	1.83%	6	88.72%	96.62%	88.91%	96.72%	7917	7948
Slow Tertiary	-	-	-	0.00	-	-	0	-	-	-	-	-	-
				84884.72	83746.78	1.34%							



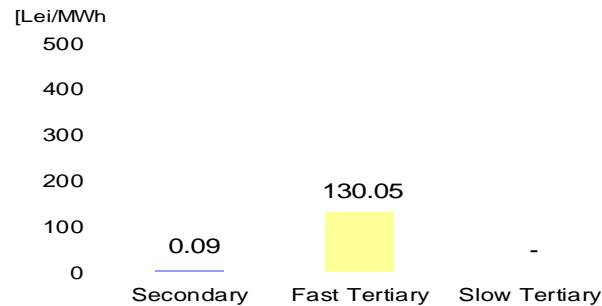
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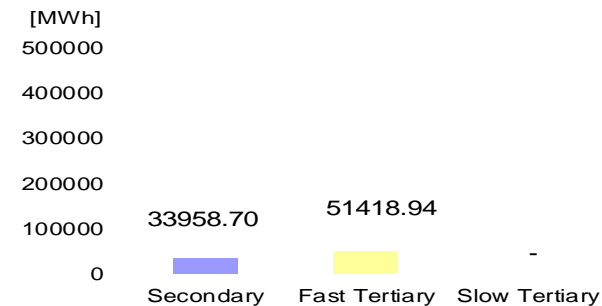
Balancing energy – Selected prices and quantities in July 2022

July 2022

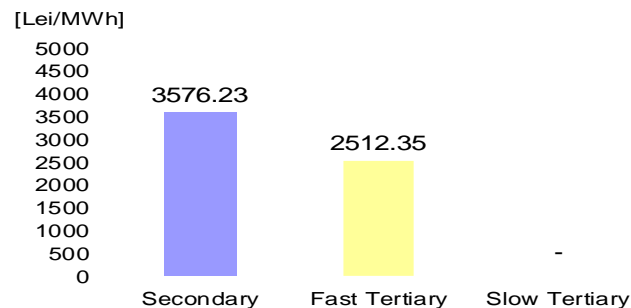
Downward regulation - average price [lei/MWh]



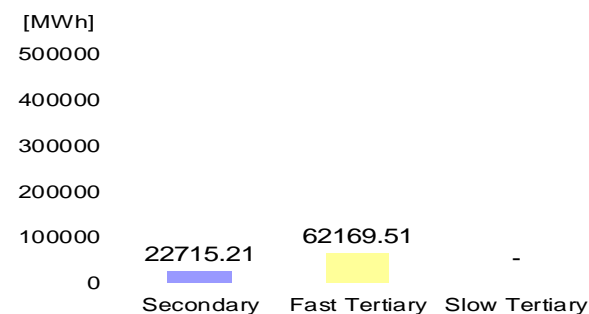
Downward regulation - selected quantities



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 .

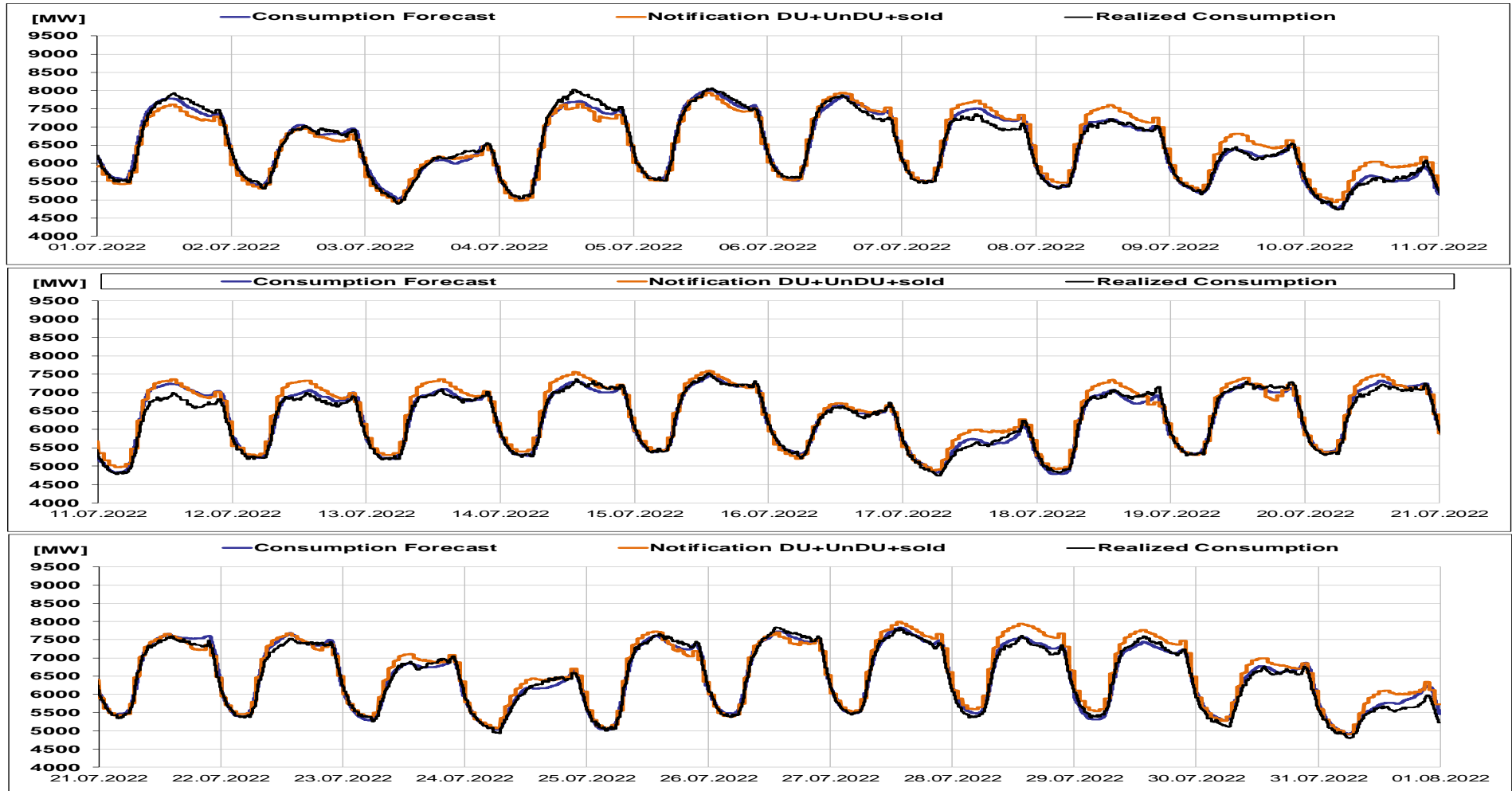


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Realized consumption, forecast, notifications in D-1



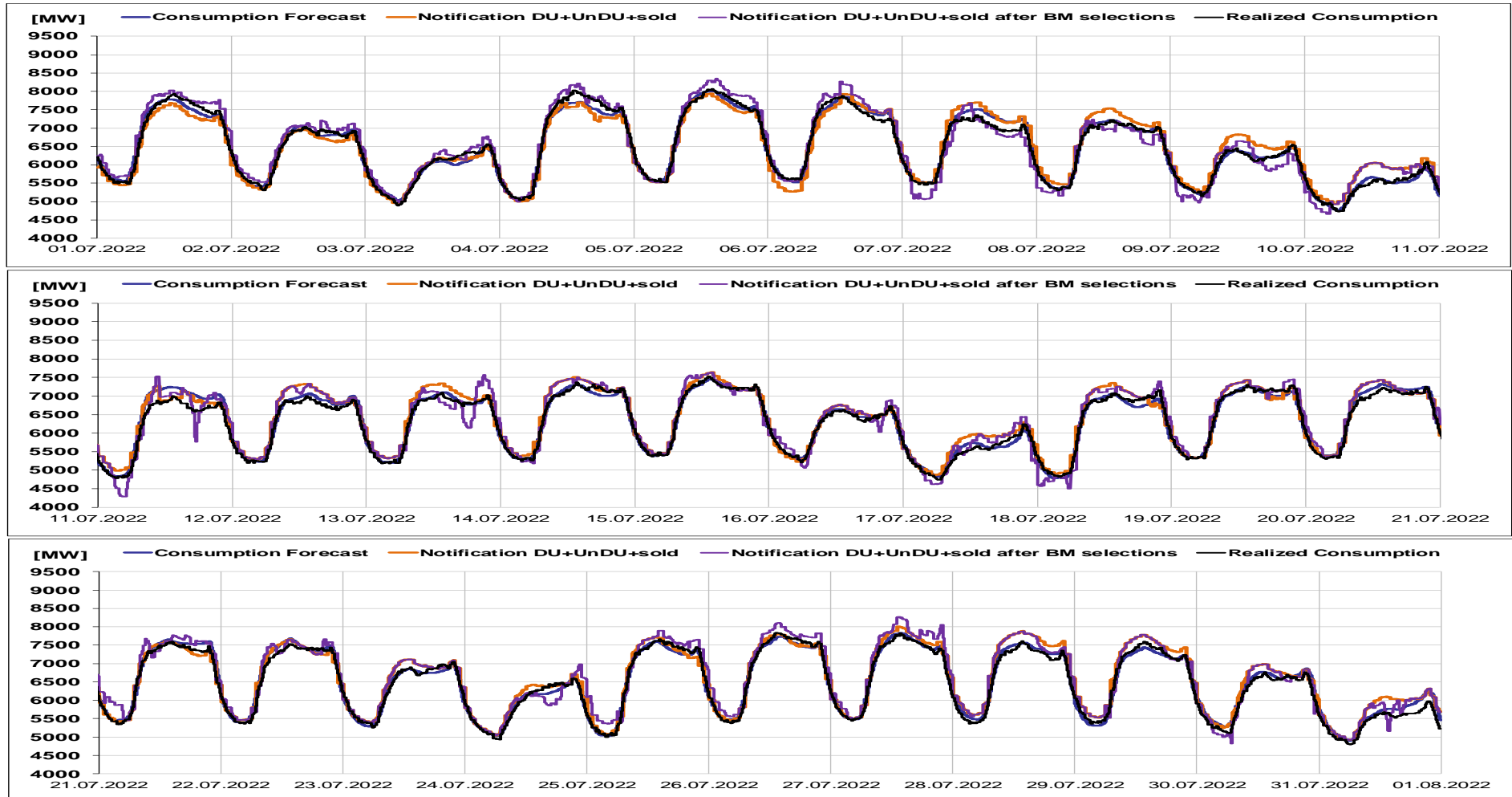


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Balancing Market

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



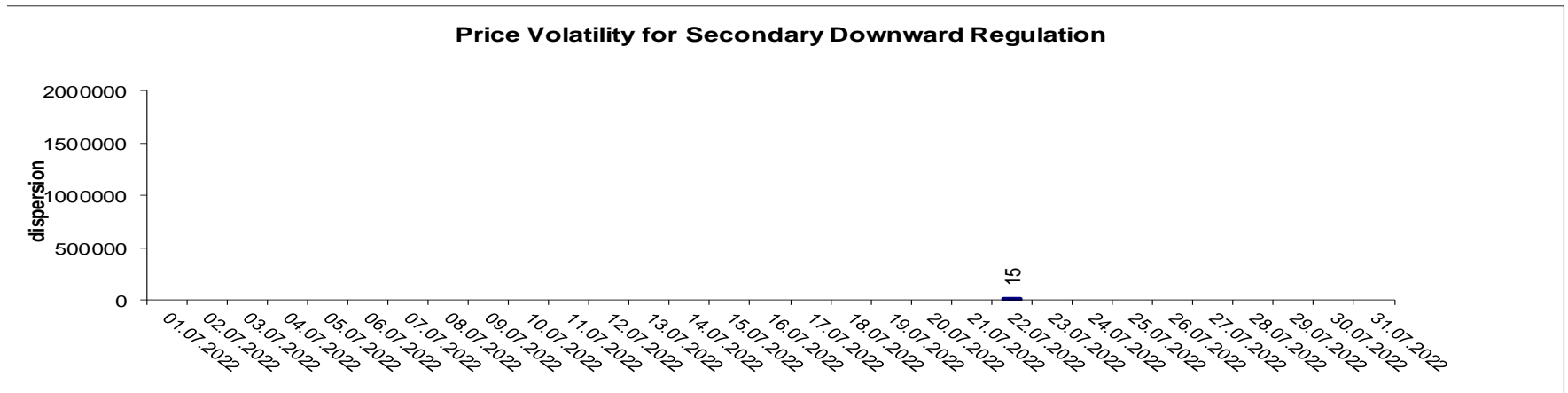
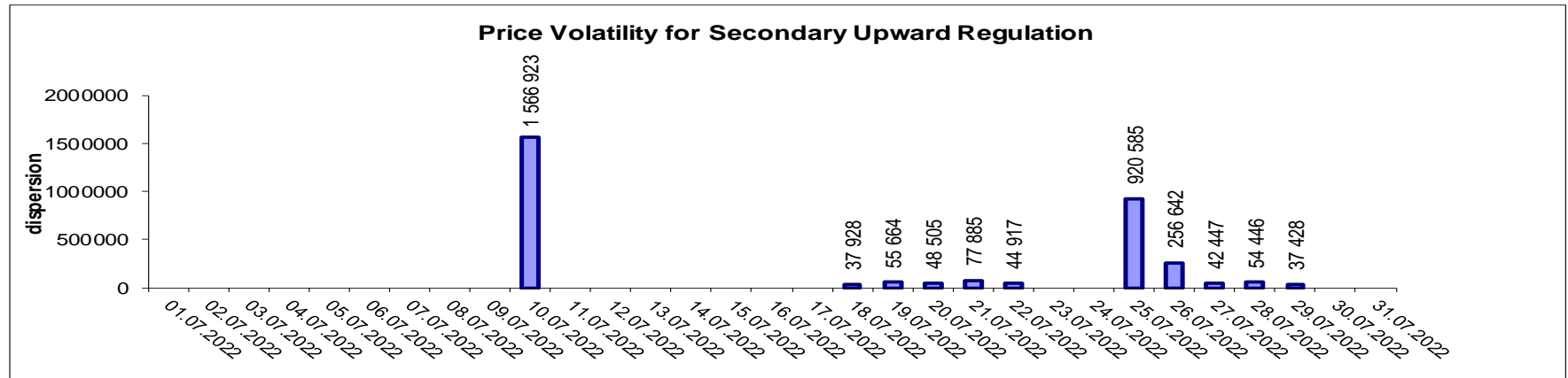


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Balancing Market

Indicators – Price Volatility for Secondary Regulation



Volatility = price dispersion on studied interval:

$$\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$



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