



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

September 2020

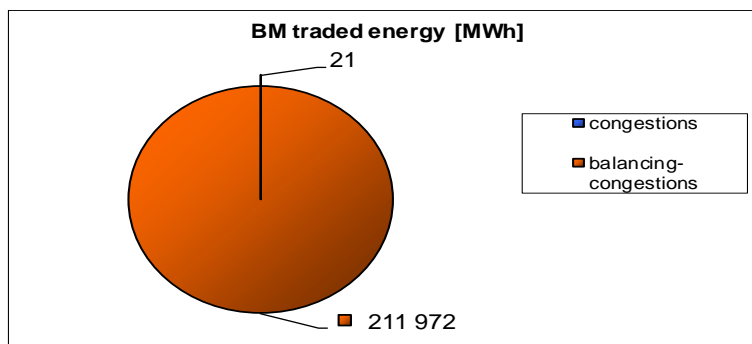
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching Center
C1 – The market share of the 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

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.

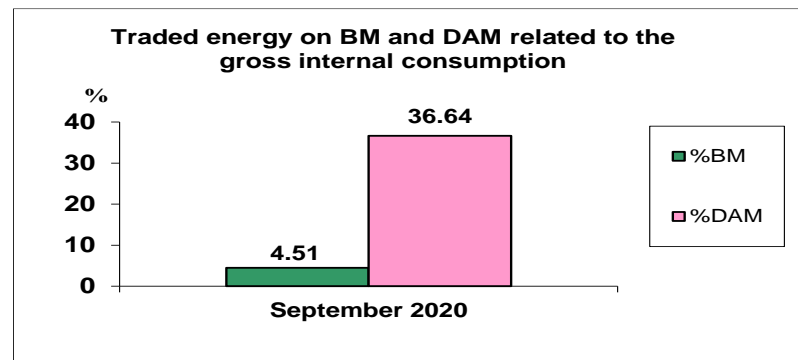
Using the records from the markets data bases. Transelectrica prepares daily. weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website www.transelectrica.ro (section Transparency).

The Balance Generation/Consumption

- The average monthly value of generated power was 6 254 MW and the actual internal gross consumption was 6 532 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.37%**. 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 **3.52%**. The greatest daily deviation regarding the notifications was registered in **27.09 (6,79%)**.
- The energy used in September 2020 for balancing the power system and congestion management was 211 993 MWh (with an average power of 294 MW, which means **4.51%** from the internal gross consumption), from which:
 - the energy used for congestion management was 21 MWh (with an average power of 0.03 MW, which means 0.0005% from the internal gross consumption).
- The energy traded in September 2020 on Day Ahead Market was 1 722 960 MWh (with an average power of 2 393 MW, which means **36.64%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 28 567 762 lei (with an average weighted price of 134,76 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 28 566 112 lei (from which startup cost 0 lei);
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for congestion management was 1 650 lei.



September 2020



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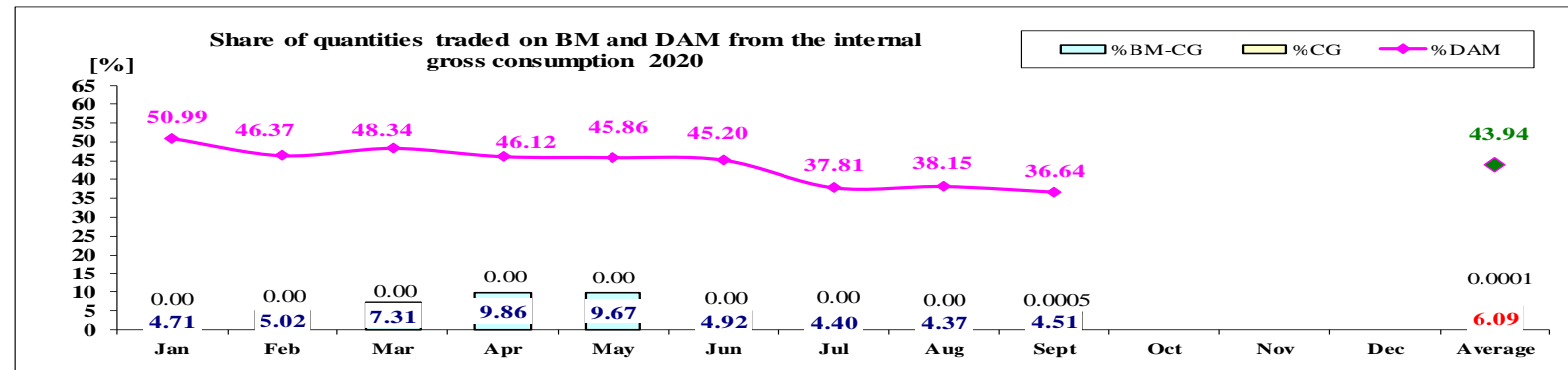
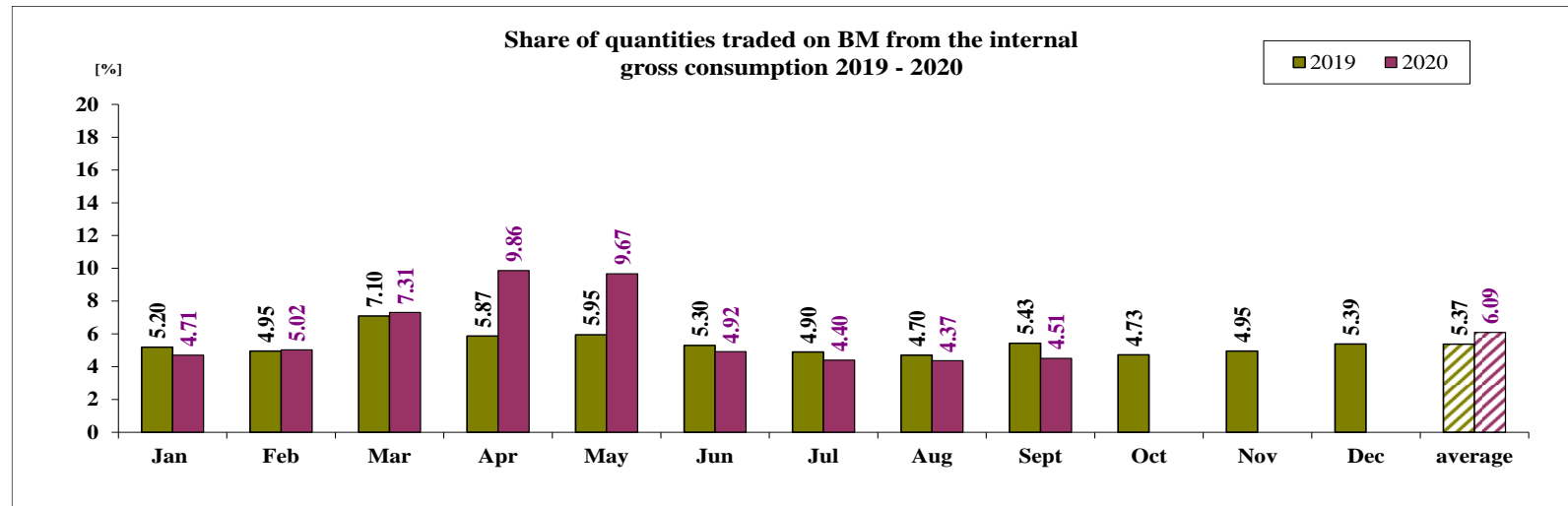
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Balancing Market

The Balance Generation / Consumption

• Monthly percentage values resulted are calculated as ratio between traded volumes on BM 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).



	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71	5.02	7.31	9.86	9.67	4.92	4.40	4.37	4.51				6.09
%DAM	50.99	46.37	48.34	46.12	45.86	45.20	37.81	38.15	36.64				43.94
%CG	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0005				0.0001
%BM-CG	4.71	5.02	7.31	9.86	9.67	4.92	4.40	4.37	4.51				6.09

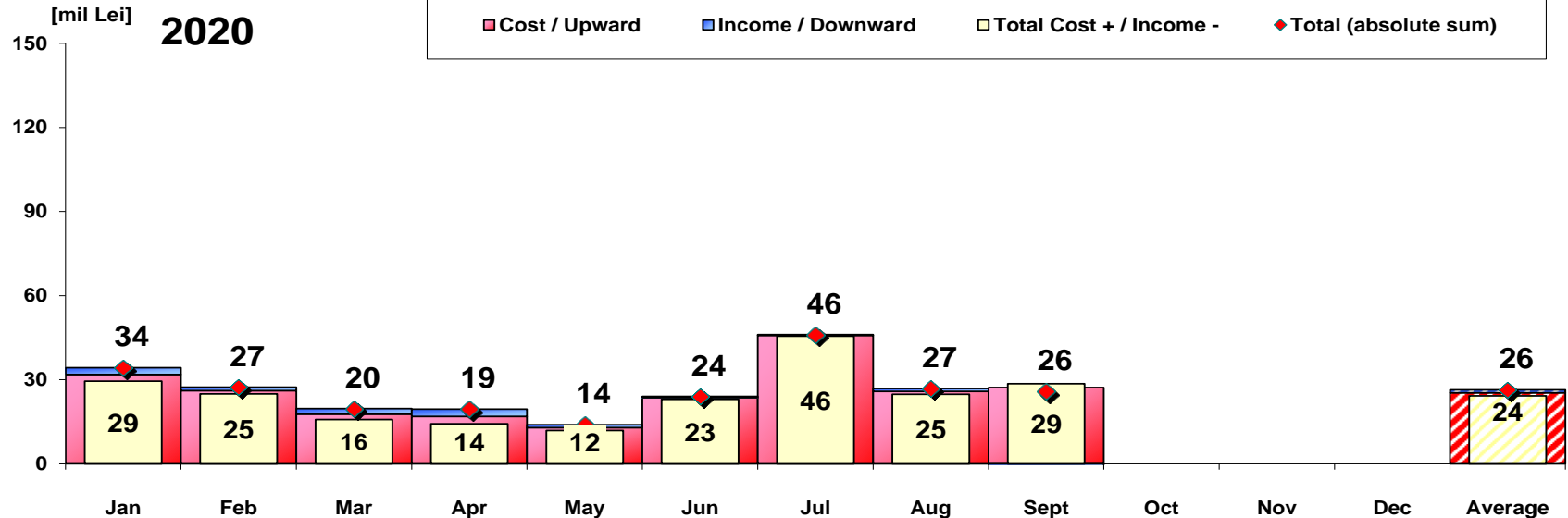
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Balancing Energy Market Transactions



[Lei]	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average	Total
Cost / Upward	31 888 098	26 145 180	17 762 040	16 885 892	12 922 176	23 543 913	45 840 936	25 852 709	27 215 587				25 339 614	228 056 530
Income / Downward	2 431 458	1 215 818	1 941 606	2 607 194	1 041 810	489 075	275 593	1 023 993	-1 350 525				1 075 114	9 676 022
CE Cost	0	0	0	0	0	0	0	0	1 650				183	1 650
Total Cost + / Income -	29 456 640	24 929 362	15 820 434	14 278 698	11 880 365	23 054 838	45 565 343	24 828 716	28 566 112				24 264 501	218 380 508
Total (absolute sum)	34 319 556	27 360 998	19 703 646	19 493 085	13 963 986	24 032 988	46 116 528	26 876 702	25 865 062				26 414 728	237 732 552

CE – Congestion Energy

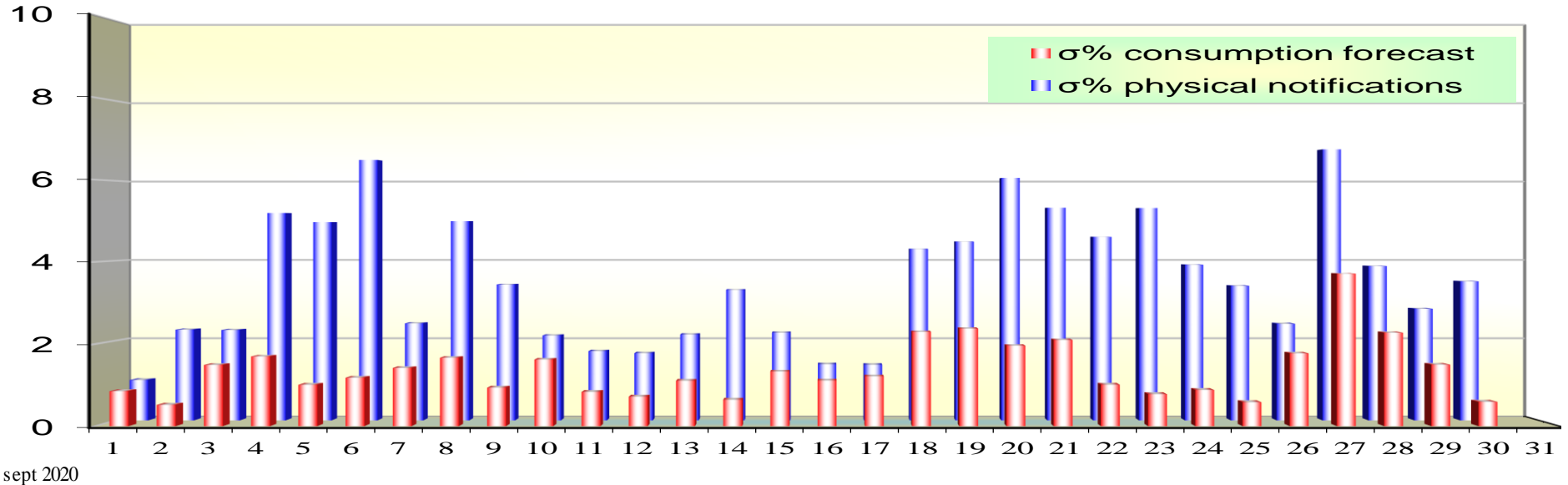
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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Standard deviation of physical notifications and consumption forecast against the actual consumption in September 2020



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
σ% consumption forecast	0.85	0.52	1.49	1.70	1.01	1.18	1.42	1.66	0.94	1.62	0.83	0.72	1.11	0.64	1.33	1.11	1.21	2.30	2.37	1.96	2.10	1.01	0.78	0.88	0.58	1.77	3.71	2.27	1.50	0.59
σ% physical notifications	1.01	2.27	2.26	5.19	4.97	6.52	2.43	4.99	3.40	2.13	1.73	1.68	2.15	3.27	2.20	1.41	1.39	4.29	4.48	6.07	5.33	4.59	5.32	3.90	3.37	2.42	6.79	3.87	2.80	3.48

σ_{average% consumption forecast} = 1.37

σ_{average % physical notifications} = 3.52

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

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

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 66 BRPs, 105 market participants, holding 200 commercially operating dispatchable units. Starting with 1st of September 2020 the following BMPs/DUs were removed:
 - ✓ from BMP list were eliminated: SE CONSTANȚA SA (30XROELCENPALASU), PETROTEL-LUKOIL SA (30XROPETROTEL—L) and ELECTROCENTRALE BORZEȘTI (former INFINITE GAS DEVELOPMENT);
 - ✓ from DUs list were eliminated: PALA2, BORZ7, PETROTEL, ORAD2 and ORAD5

September 2020

Downward regulation

Downward regulation	Prices [lei/MWh]			Quantities [MWh]			Participants						
	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)	(selected)	(actually delivered)		
Secondary	-46.45	5.00	-100.00	51948.52	51948.52	0.00%	3	47.86%	100.00%	47.86%	100.00%	3660	3660
Fast Tertiary	8.78	52.00	-100.00	122733.76	119529.88	2.61%	8	61.45%	91.77%	62.22%	91.88%	4279	4355
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				174682.28	171478.40	1.83%							

Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)	(selected)	(selected)	(actually delivered)	
Secondary	734.05	1000.00	452.00	22995.88	22995.88	0.00%	3	43.33%	100.00%	43.33%	100.00%	3483	3483
Fast Tertiary	589.90	972.96	400.00	18601.10	17518.62	5.82%	8	52.90%	90.03%	51.20%	89.76%	3806	3710
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				41596.98	40514.50	2.60%							



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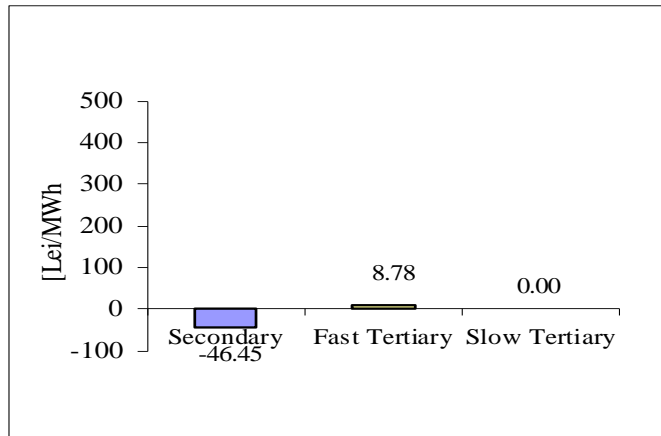
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Balancing Market

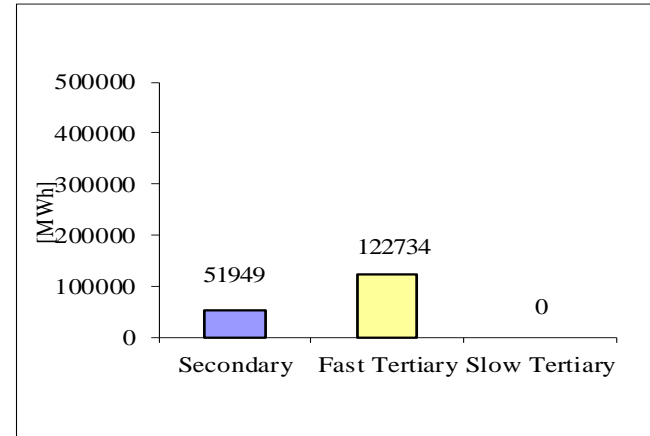
Balancing energy – Selected prices and quantities in September 2020

September 2020

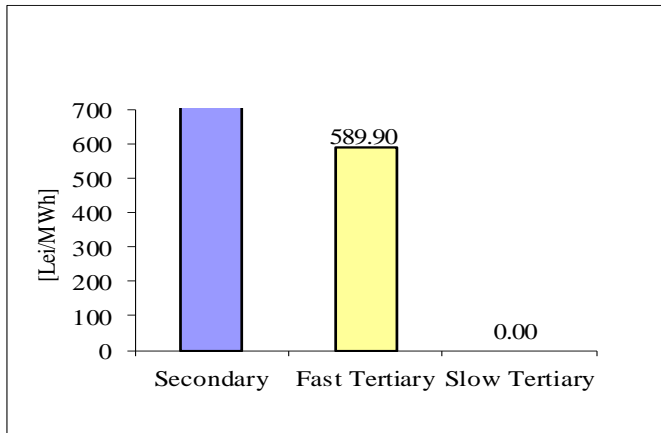
Downward regulation - average price [lei/MWh]



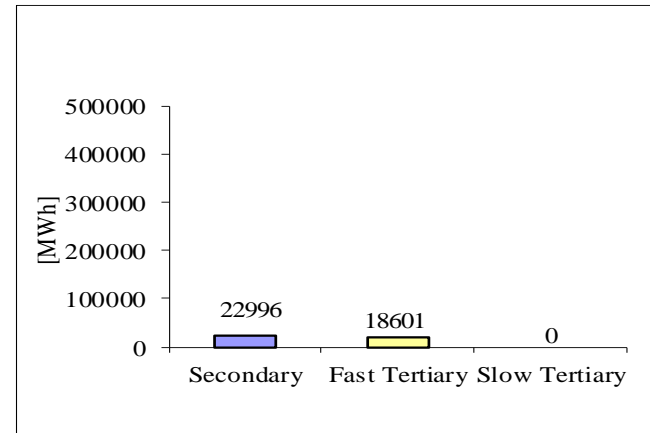
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



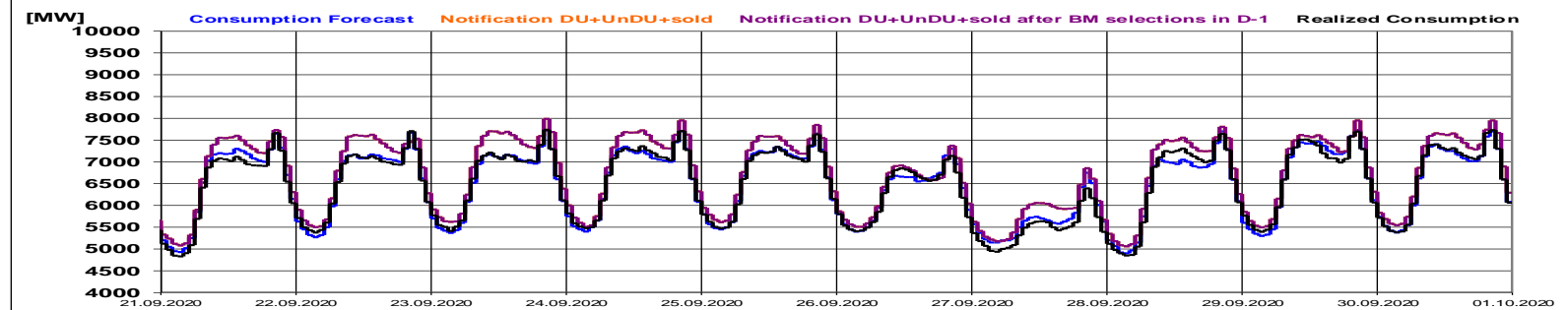
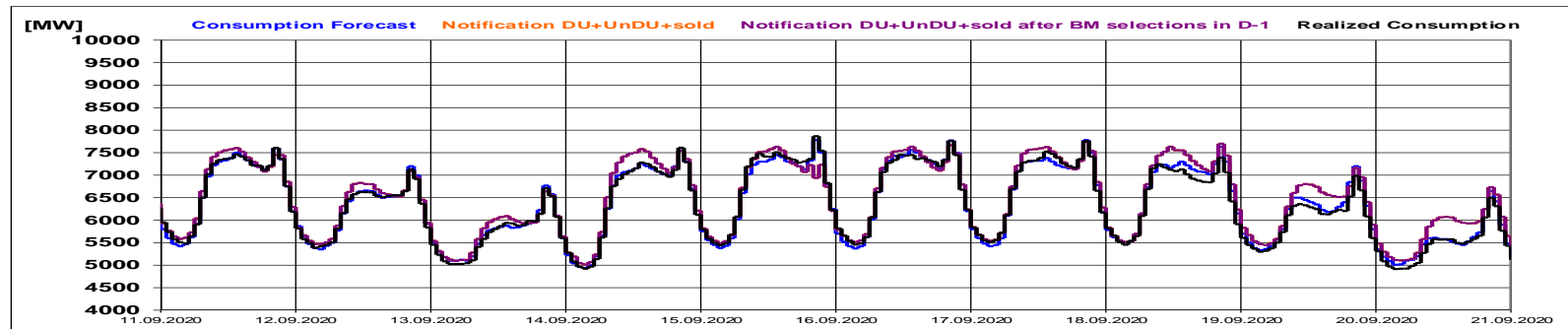
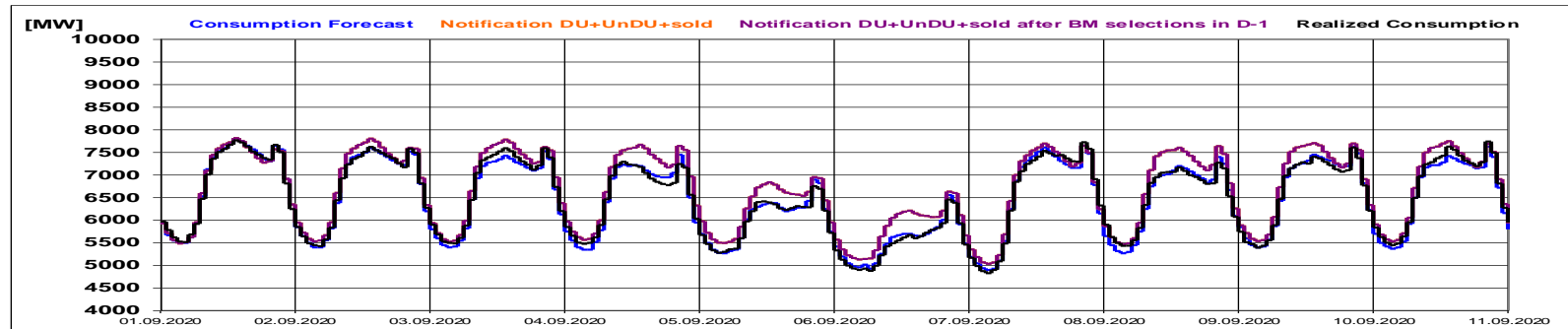


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Balancing Market

Realized consumption, forecast, notifications,
notifications after BM selections in D-1



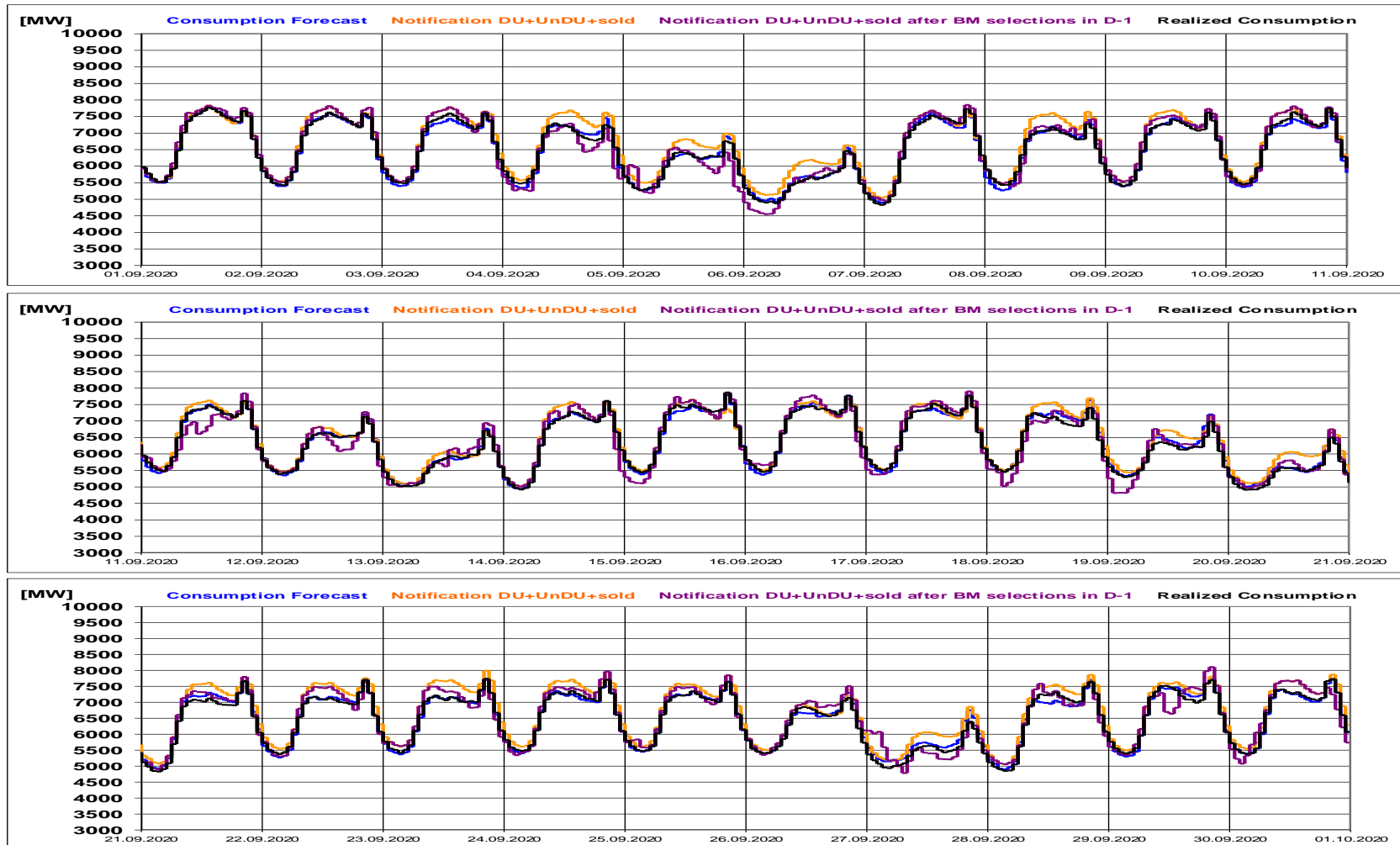


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Balancing Market

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



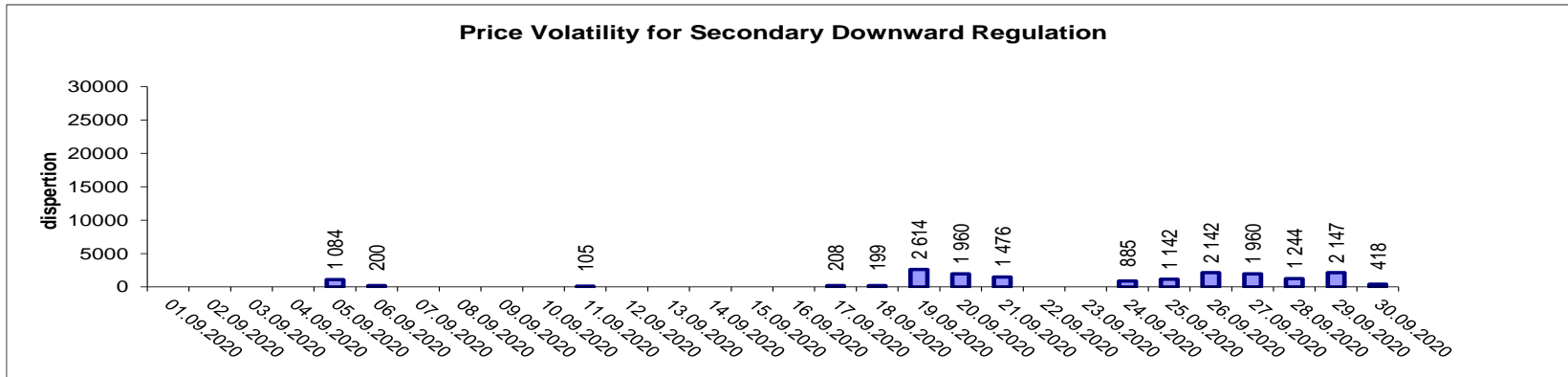
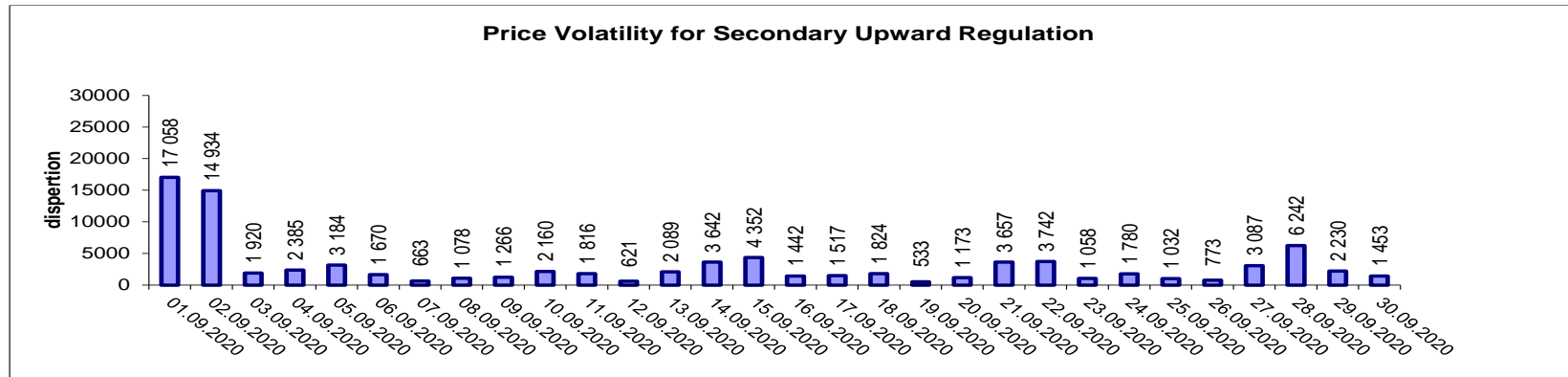


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Balancing Market

Indicators – Price Volatility for Secondary Regulation



Price volatility for Secondary Downward Regulation, determined as the daily price dispersion, recorded zero values throughout the month, because of constant price values from one hour to the next.

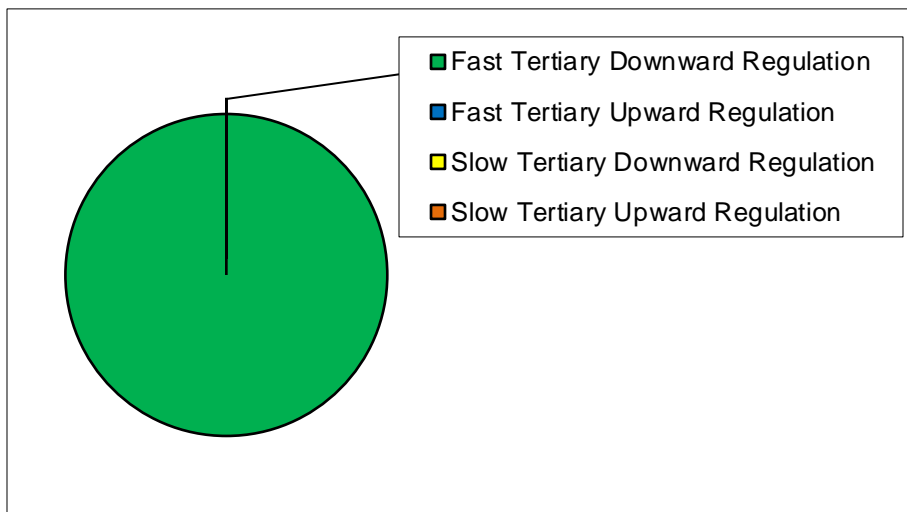
Volatility = price dispersion on studied interval:

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

Congestion Management

	Quantities [MWh]		Participants
	<i>Selected</i>	<i>Delivered</i>	<i>Number</i>
Fast Tertiary Downward Regulation	24.17	21.22	1.00
Fast Tertiary Upward Regulation	-	-	-
Slow Tertiary Downward Regulation	-	-	-
Slow Tertiary Upward Regulation	-	-	-
	24.17	21.22	

Selected energy [MWh]



Note: The value of delivered energy for congestion management (which induces costs for internal management congestion) is the result of the algorithm used to determine the costs for balancing the power system and internal congestion management.



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