



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

January 2020

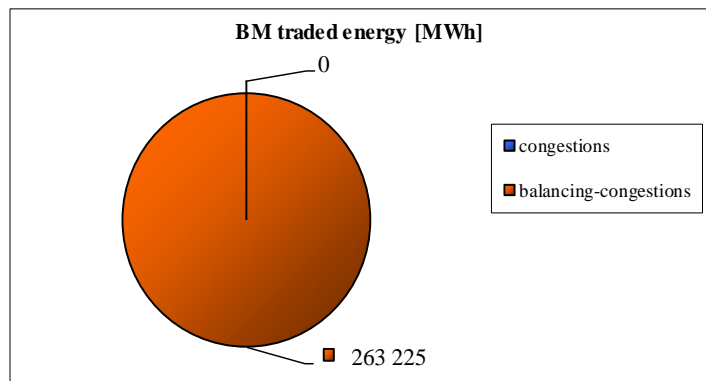
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching Center
C1 – The market share of the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

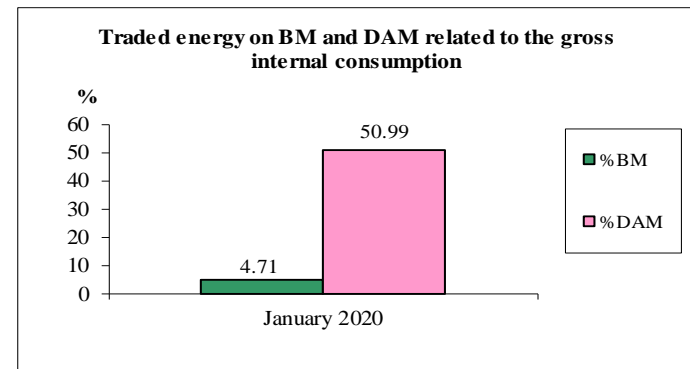
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website www.transelectrica.ro (section Transparency).

The Balance Generation/Consumption

- The average monthly value of generated power was 7 225 MW and the actual internal gross consumption was 7 517 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.65%**. 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 **2.78%**. The greatest daily deviation regarding the notifications was registered in **03.01 (5.47%)**.
- The energy used in January 2020 for balancing the power system and congestion management was 263 225 MWh (with an average power of 354 MW, which means **4.71%** from the internal gross consumption). No transactions were made for congestion management.
- The energy traded in January 2020 on Day Ahead Market was 2 851 779 MWh (with an average power of 3 833MW, which means **50.99%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 29 456 640 lei (with an average weighted price of 112 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 29 456 640 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 0 lei.



January 2020



	Generation units commissioned in 2019	Generation units shut down in 2019
Pi [MW]	64.31	3976.45

Pi NRA license = Installed power specified in the technical documentation from NRA license.

Installed power (gross) Pi indicated by the manufacturer – the nominal active power registered on the plate of the generator or in the technical documentation of the construction plant for all the generators that are in operation and which have not been removed from the record by disposal. In installed power was included the groups undergoing re-technologization or passed into conservation for more than 1 year.

*** Observations:**

- the values were calculated in relation to the installed power indicated by the production on 1th of January 2019;
- for the new production units installed in 2019, both the new units and the positive power differences between the installed power according to ANRE license and the installed power indicated by the manufacturer in 2019 were taken into account;
- for the production units released in 2019, the units withdrawn from operation, those without ANRE production license and the power differences between the power installed according to the ANRE license and the installed power indicated by the manufacturer in 2019 were taken into account.



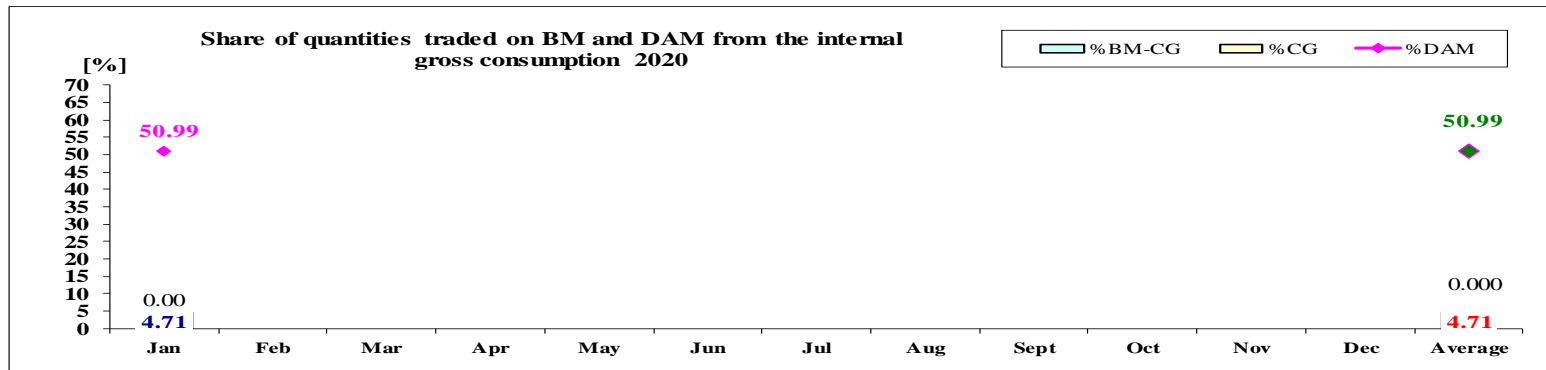
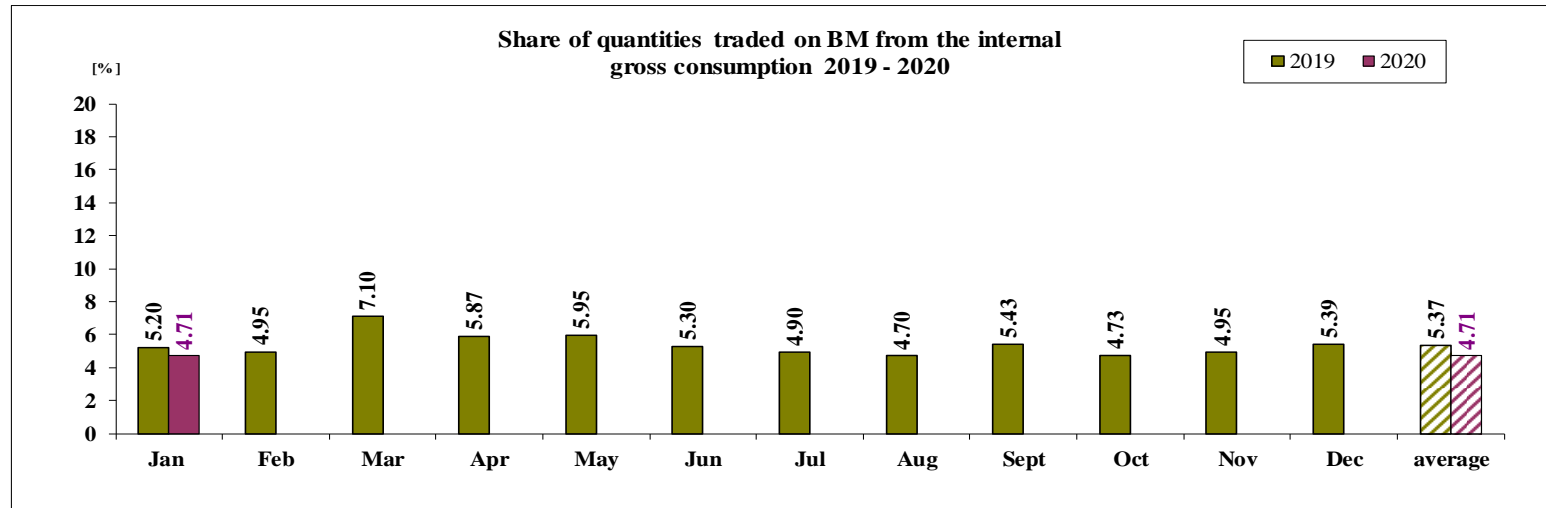
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Balancing Market

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).



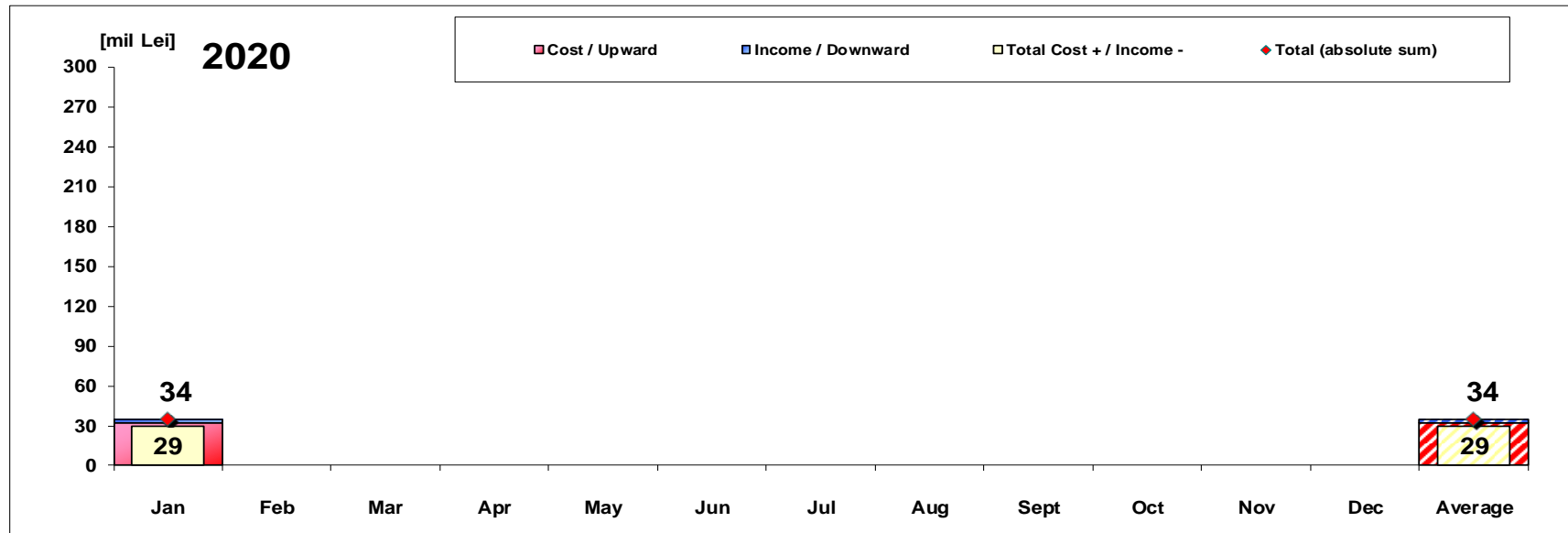
	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71												4.71
%DAM	50.99												50.99
%CG	0.00												0.000
%BM-CG	4.71												4.71



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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												31 888 098	31 888 098
Income / Downward	2 431 458												2 431 458	2 431 458
CE Cost	0												0	0
Cost for energy traded on the Balancing Market (includes startup cost)	29 456 640												29 456 640	29 456 640
Cost+/Income- (BE and CE)	29 456 640												29 456 640	29 456 640
Total (absolute sum) (BE and CE)	34 319 556												34 319 556	34 319 556

CE – Congestion Energy

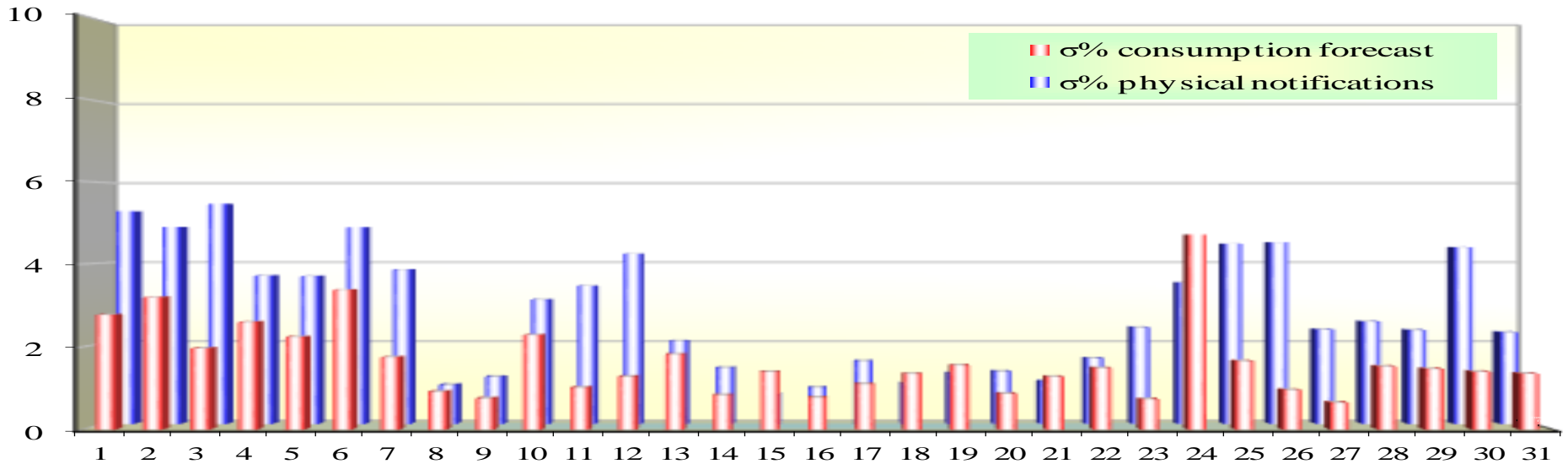
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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



January 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	31
σ% consumption forecast	2.78	3.20	1.96	2.60	2.24	3.38	1.75	0.92	0.75	2.28	1.02	1.28	1.82	0.83	1.39	0.78	1.10	1.35	1.56	0.86	1.28	1.49	0.73	4.71	1.66	0.96	0.65	1.53	1.47	1.40	1.35
σ% physical notifications	5.28	4.89	5.47	3.68	3.67	4.89	3.84	0.97	1.17	3.09	3.43	4.22	2.06	1.40	0.73	0.90	1.56	1.00	1.26	1.30	1.06	1.63	2.40	3.51	4.48	4.51	2.35	2.54	2.33	4.39	2.28

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

σ average % consumption forecast = 1.65

σ average % physical notifications = 2.78

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

Balancing Market

Balancing energy – Selected prices and quantities

- At the beginning of the month on the Balancing Market operated 67 BRPs, 111 market participants, holding 215 commercially operating dispatchable units.

January 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	1.12	25.00	0.10	54053.20	54053.20	0.00%	5	65.72%	96.94%	65.72%	96.94%	4999	4999
Fast Tertiary	15.88	845.93	0.10	156891.10	152652.66	2.70%	10	32.70%	88.82%	33.23%	89.38%	2691	2727
Slow Tertiary	52.87	70.00	50.00	4748.00	4705.70	0.89%	1	100.00%	100.00%	100.00%	100.00%	10000	10000
				215692.29	211411.55	1.98%							

Upward regulation

	Monthly	Maximum	Minimum	Total	Actually	Deviation	C1	C3	C1	C3	HHI	HHI	
	average			selected	delivered	%	Number	(selected)	(actually delivered)		(selected)	(actually delivered)	
Secondary	701.69	950.00	518.00	27476.83	27476.83	0.00%	5	64.44%	96.63%	64.44%	96.63%	4892	4892
Fast Tertiary	516.64	949.00	0.10	25124.70	24337.01	3.14%	12	63.08%	90.25%	64.10%	90.89%	4426	4539
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				52601.53	51813.84	1.50%							



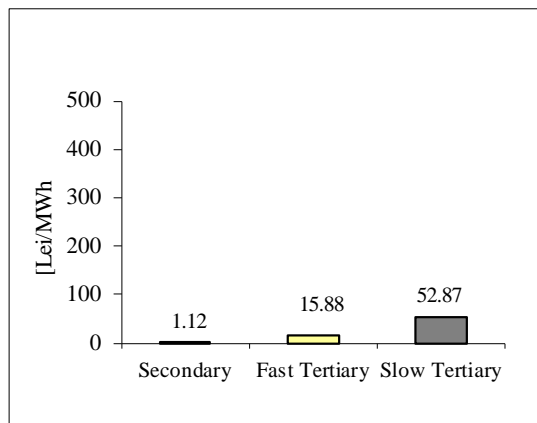
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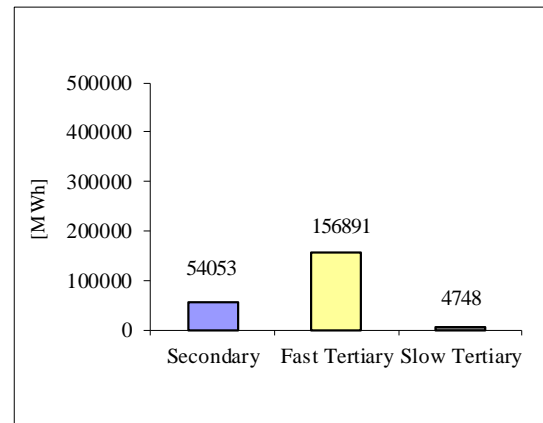
Balancing energy – Selected prices and quantities in January 2020

January 2020

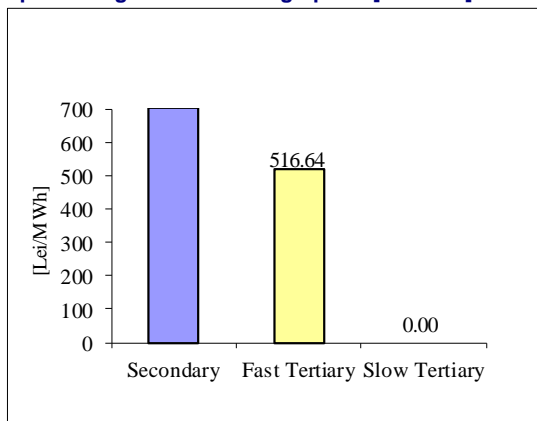
Downward regulation - average price [lei/MWh]



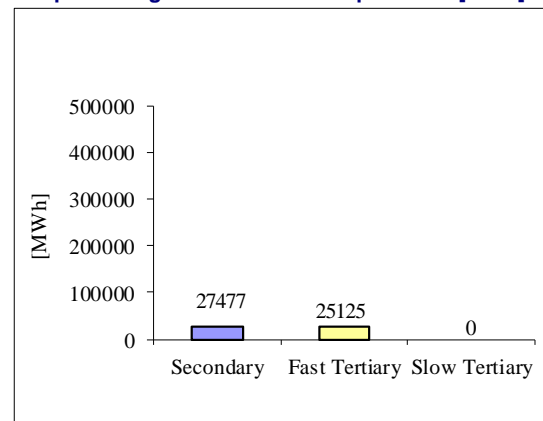
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



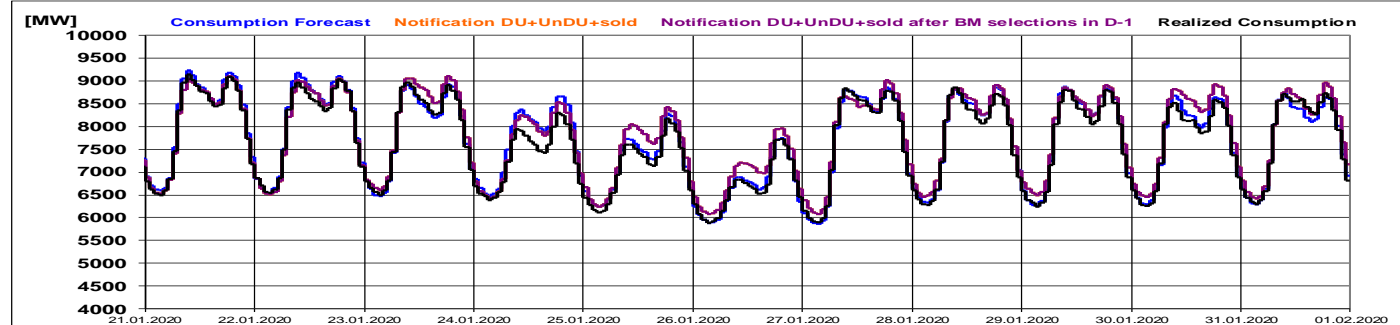
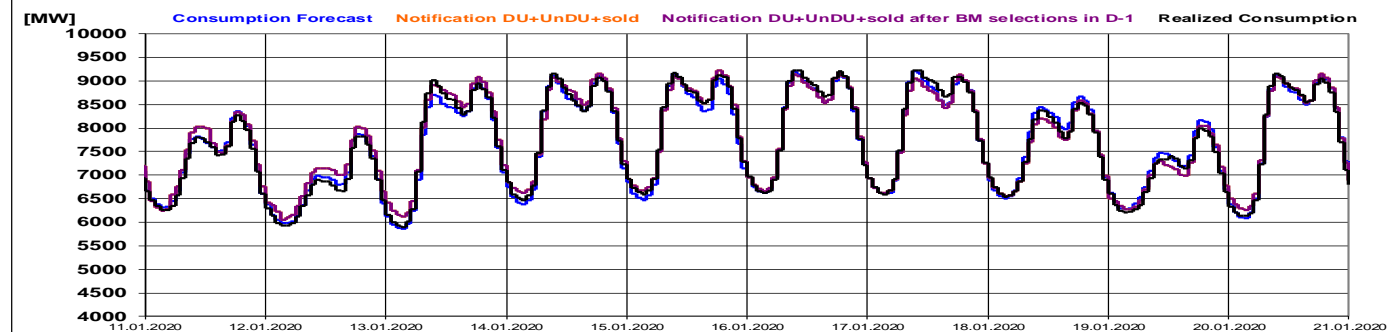
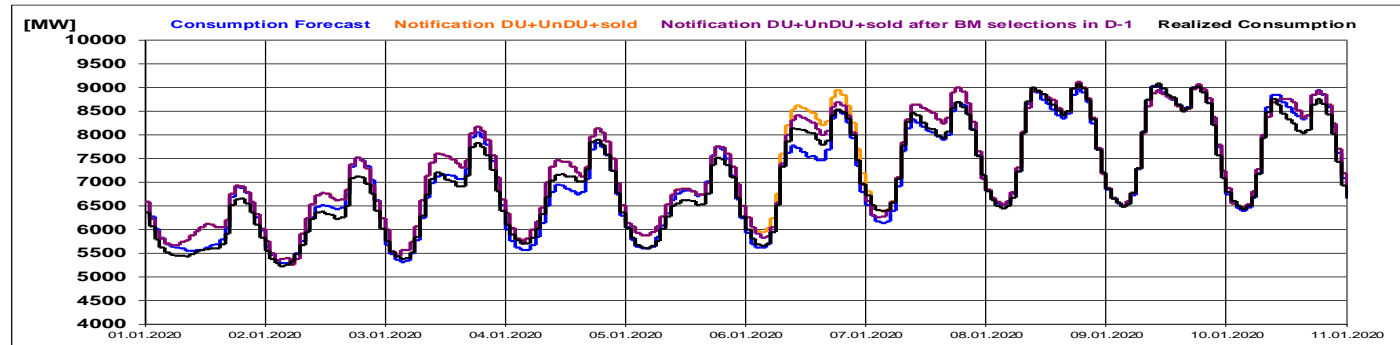


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Balancing Market

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



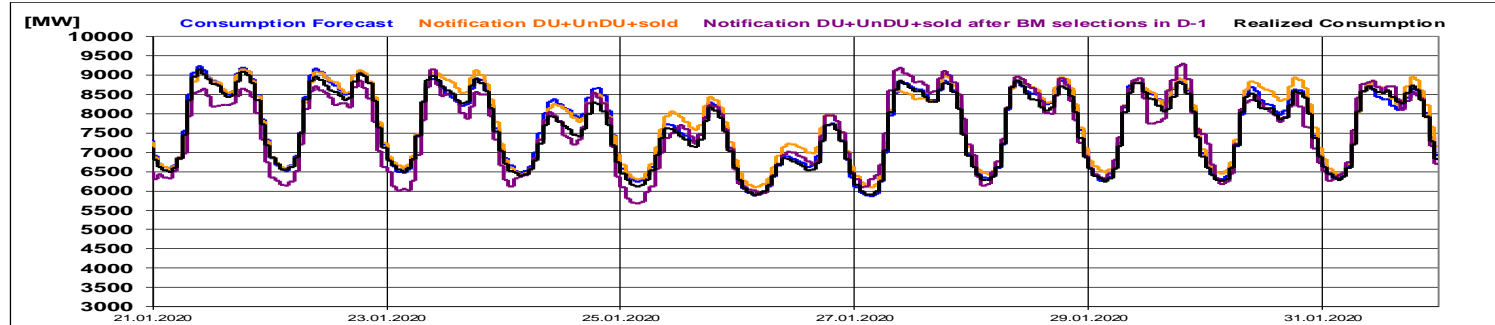
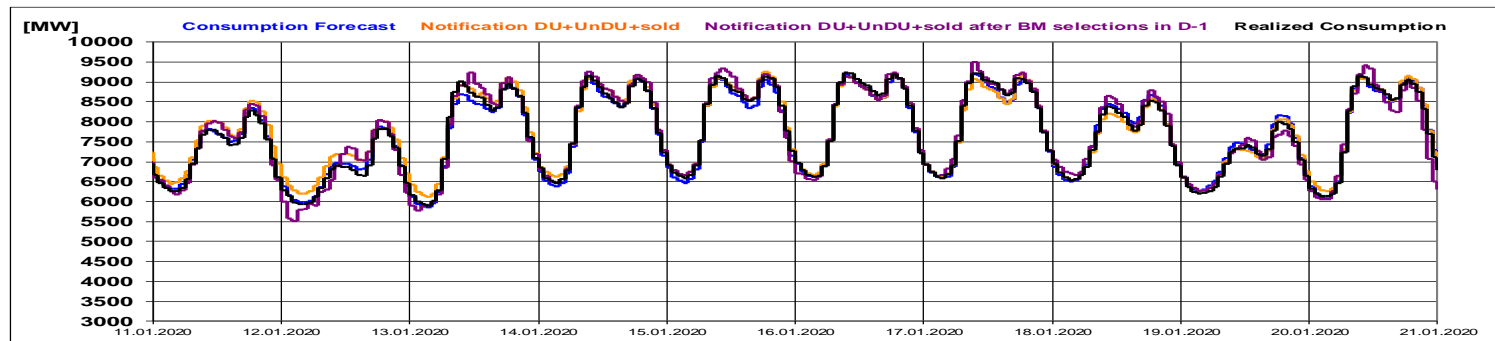
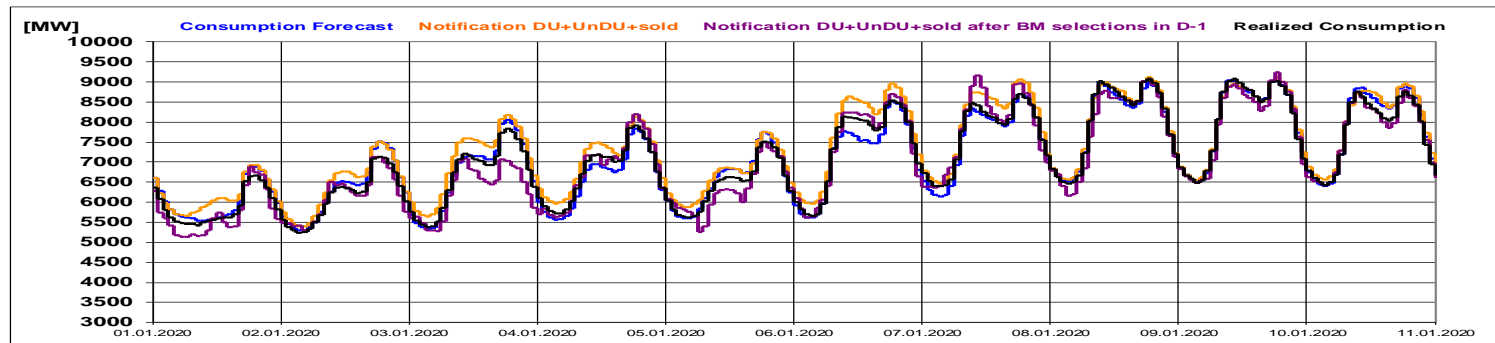


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Balancing Market

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



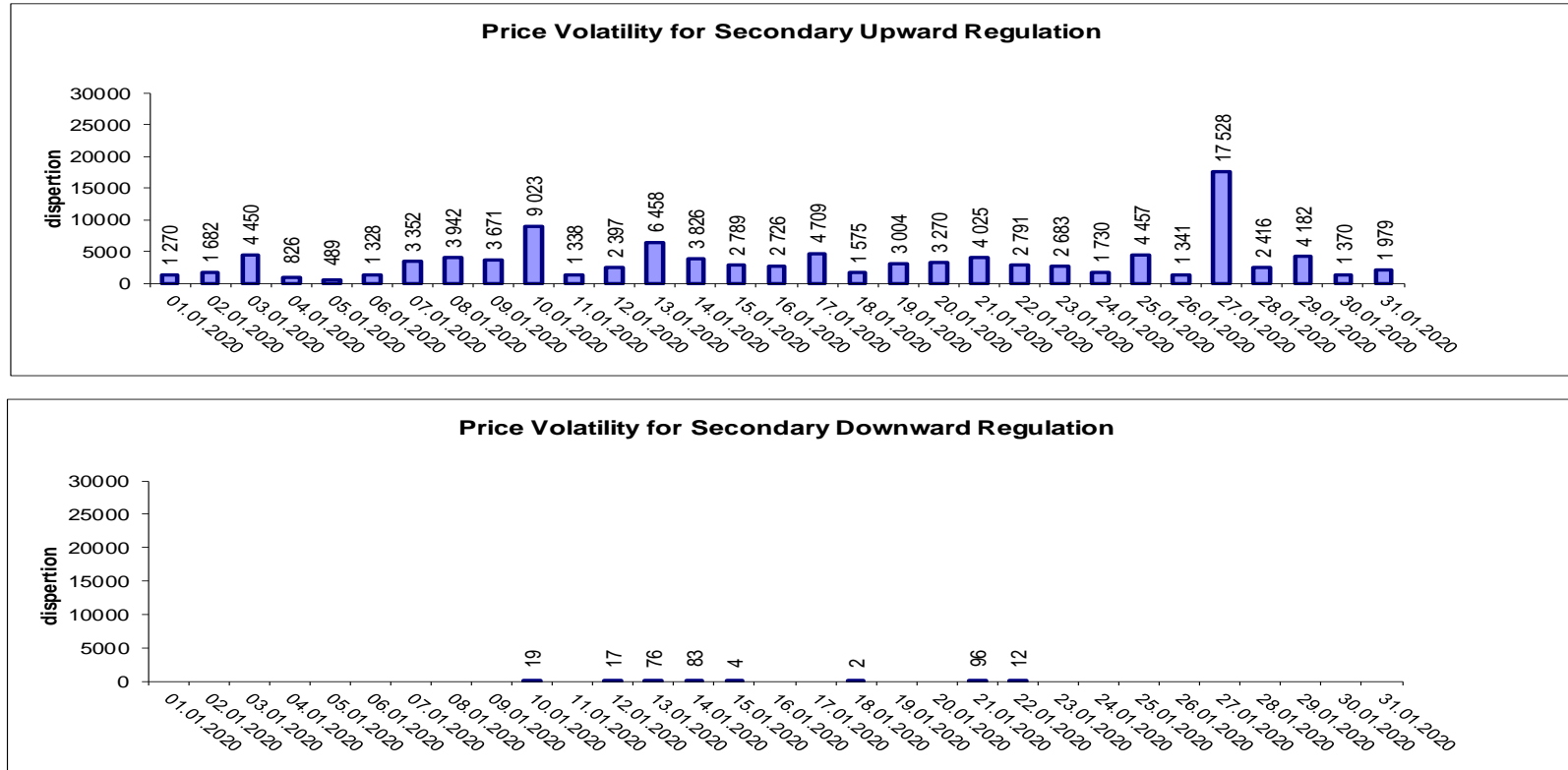


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Balancing Market

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:

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



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