



Transelectrica®
Societate Administrată în Sistem Dualist

MARKET MONITORING REPORT

Balancing Market

February 2020

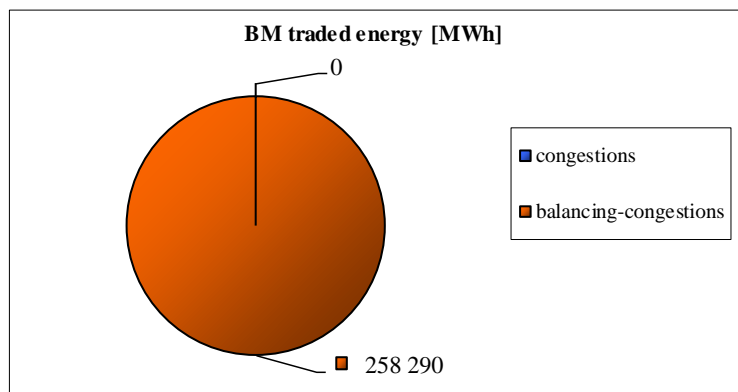
ANRE - Romanian Energy Regulatory Authority
HHI - Herfindahl-Hirschman Index
BRP - Balance Responsible Party
BM - Balancing Market
DAM - Day Ahead Market
TSO - Transmission System Operator
DU – Dispatchable Unit
PN – Physical Notification
NDC - National Dispatching Center
C1 – The market share of the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

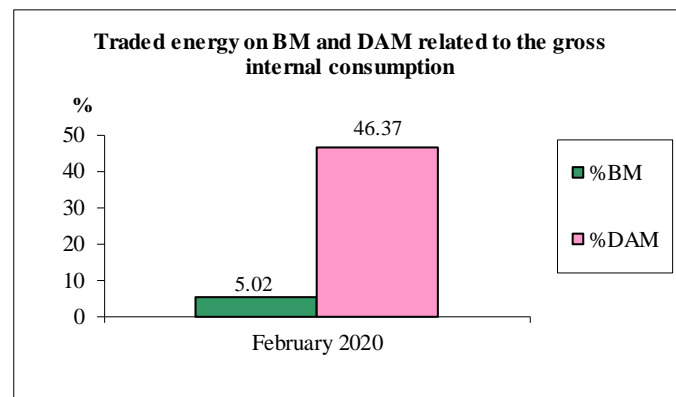
Using the records from the markets data bases, Transelectrica prepares daily, weekly and monthly monitoring reports. A part of the data included in these reports (those data which are not confidential) are published on the website www.transelectrica.ro (section Transparency).

The Balance Generation/Consumption

- The average monthly value of generated power was 7 015 MW and the actual internal gross consumption was 7 386 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being **1.60%**. 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 **2.82%**. The greatest daily deviation regarding the notifications was registered in **26.02 (5.47%)**.
- The energy used in February 2020 for balancing the power system and congestion management was 258 290 MWh (with an average power of 371 MW, which means **5.02%** from the internal gross consumption). No transactions were made for congestion management.
- The energy traded in February 2020 on Day Ahead Market was 2 383 752 MWh (with an average power of 3 425 MW, which means **46.37%** from the internal gross consumption). Data are shown in EET hours.
- The total cost of the energy traded on the Balancing Market was 24 929 362 lei (with an average weighted price of 97 lei/MWh), from which:
 - the cost of the energy paid by C.N.T.E.E. Transelectrica S.A. for balancing was de 24 929 362 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.



February 2020





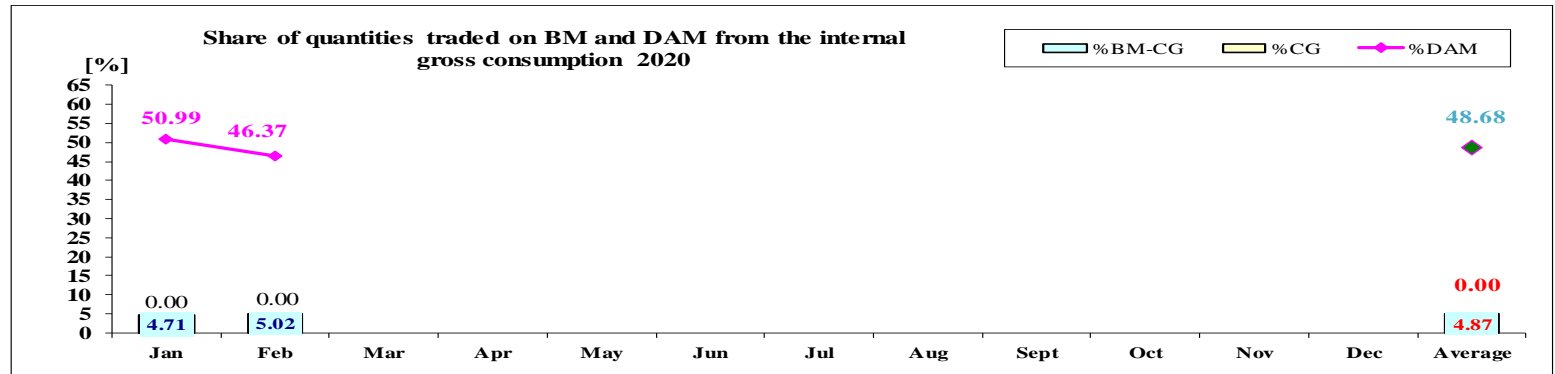
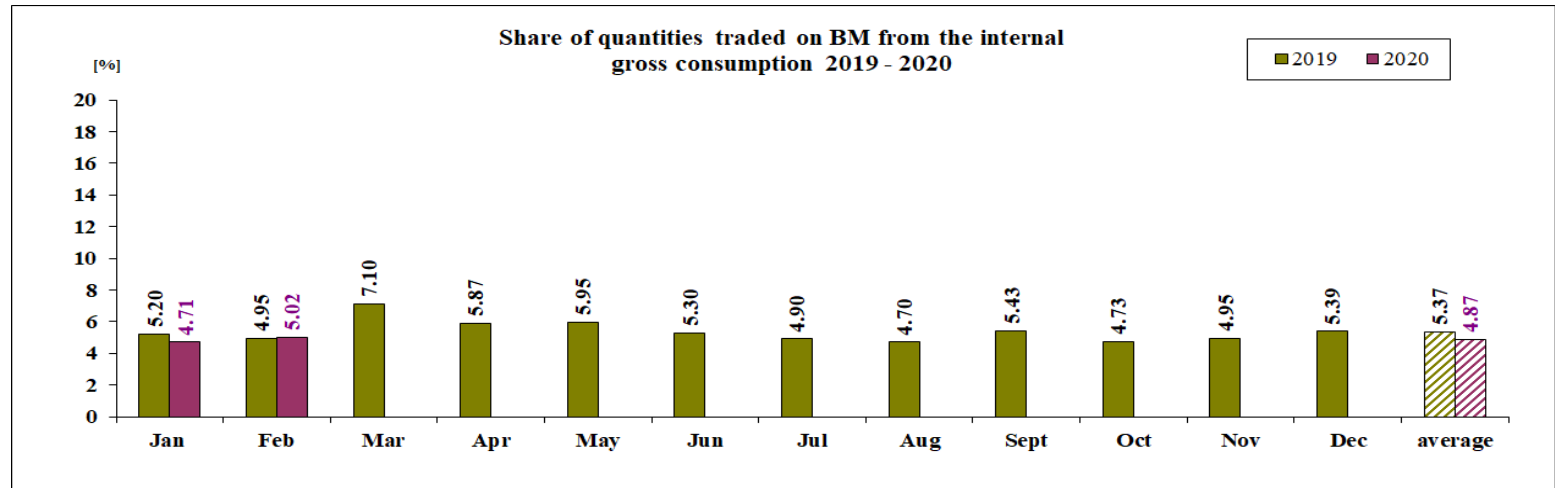
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Balancing Market

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).

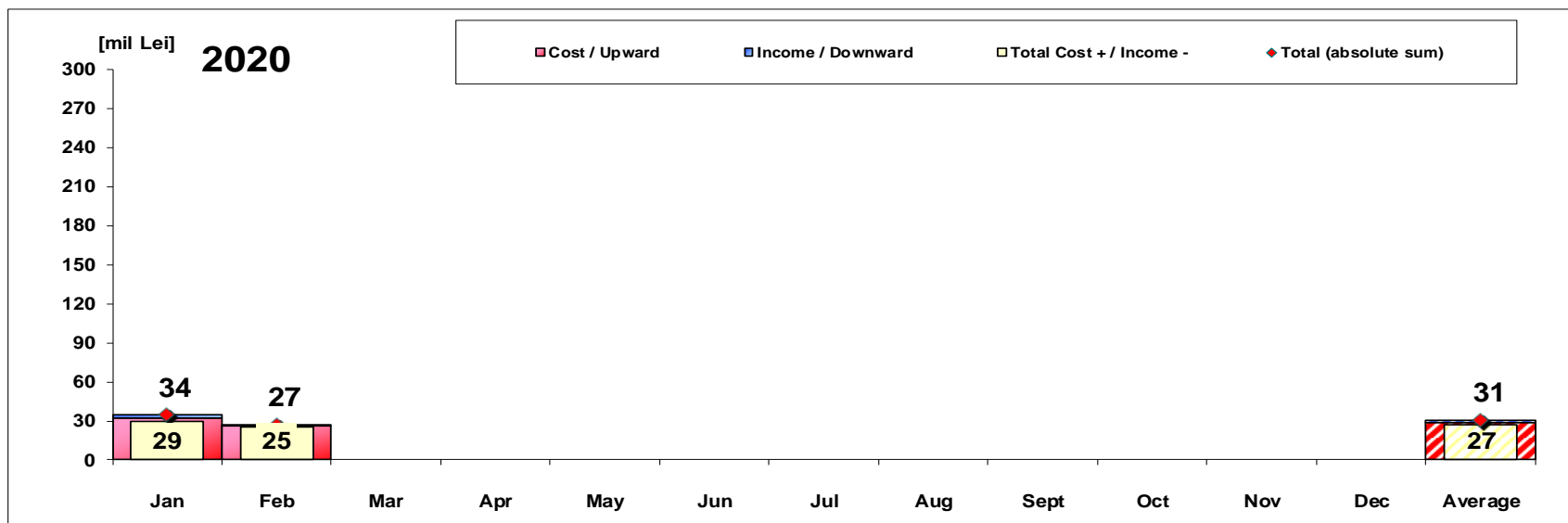


	2020												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Average
%BM	4.71	5.02											4.87
%DAM	50.99	46.37											48.68
%CG	0.00	0.00											0.000
%BM-CG	4.71	5.02											4.87



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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											29 016 639	58 033 278
Income / Downward	2 431 458	1 215 818											1 823 638	3 647 276
CE Cost	0	0											0	0
Cost for energy traded on the Balancing Market (includes startup cost)	29 456 640	24 929 362											27 193 001	54 386 002
Cost+/Income- (BE and CE)	29 456 640	24 929 362											27 193 001	54 386 002
Total (absolute sum) (BE and CE)	34 319 556	27 360 998											30 840 277	61 680 554

CE – Congestion Energy

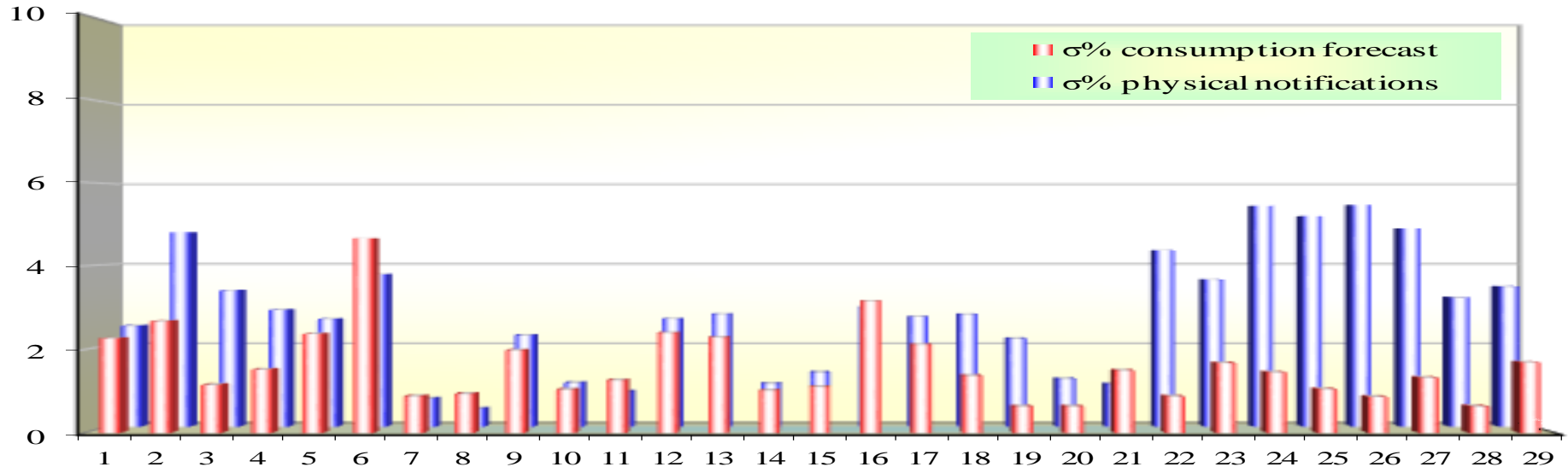
* The average annual value of BM transactions (the absolute sum of upward and downward transactions) was calculated as average of monthly values.



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Balancing Market

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



February 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
σ% consumption forecast	2.26	2.68	1.15	1.52	2.37	4.66	0.88	0.94	1.98	1.04	1.26	2.40	2.29	1.01	1.10	3.16	2.12	1.37	0.63	0.63	1.50	0.87	1.67	1.45	1.05	0.86	1.32	0.64	1.69
σ% physical notifications	2.49	4.80	3.36	2.89	2.66	3.76	0.70	0.45	2.26	1.08	0.87	2.66	2.78	1.06	1.34	2.95	2.71	2.78	2.18	1.18	1.05	4.35	3.63	5.45	5.20	5.47	4.89	3.19	3.46

σ_{average% consumption forecast} = 1.60

σ_{average % physical notifications} = 2.82

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

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

R = Realized Consumption;

N = Physical Notifications;

P = Consumption Forecast.

Balancing Market

Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 68 BRPs, 110 market participants, holding 204 commercially operating dispatchable units. Starting with 1st of February 2020, production units BUCS1(30WELCEBUCU1---C), BUCS2 (30WELCEBUCU2---7), BUCS5 (30WELCEBUCU5---T), BUCS6 (30WELCEBUCU6---O), BUCV1 (30WELCEBUCV1---6), BUCV2 (30WELCEBUCV2---1) si PROG1 (30WELCEPROG1---L) belonging to BMP Electrocentrale Bucuresti SA (30XROELCEN ----- D) and production units DROB1 (30WDROBDROB1---Z), DROB4 (30WDROBDROB4---K), DROB5 (30WDROBDROB5---F) si DROB6 (30WDROBDROB6---A) belonging to BMP RAAN Regia Autonoma Activitati Nucleare (30XROROMAGTERMOB), were removed from the list of units available on the Balancing Market, the reason being the lack of ANRE production license (unavailable groups of duration). For the same reason, BMP RAAN Regia Autonoma Activitati Nucleare (30XROROMAGTERMOB) was removed from BMP list starting with 1st of February 2020.

February 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	0.10	0.10	0.10	50788.78	50788.78	0.00%	5	64.49%	96.38%	64.49%	96.38%	4688	4688
Fast Tertiary	7.95	725.81	0.10	160181.08	155376.94	3.00%	11	39.45%	87.52%	39.74%	87.82%	2806	2836
Slow Tertiary	-	-	-	-	-	-	-	-	-	-	-	-	-
				210969.86	206165.72	2.28%							

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	646.03	791.54	503.85	24934.65	24934.65	0.00%	5	65.10%	96.28%	65.10%	96.28%	4746	4746
Fast Tertiary	379.97	725.00	0.10	25702.44	24983.09	2.80%	12	48.84%	94.06%	49.38%	94.69%	4021	4082
Slow Tertiary	250.00	250.00	250.00	2210.00	2206.60	0.15%	1	100.00%	100.00%	100.00%	100.00%	10000	10000
				52847.09	52124.34	1.37%							



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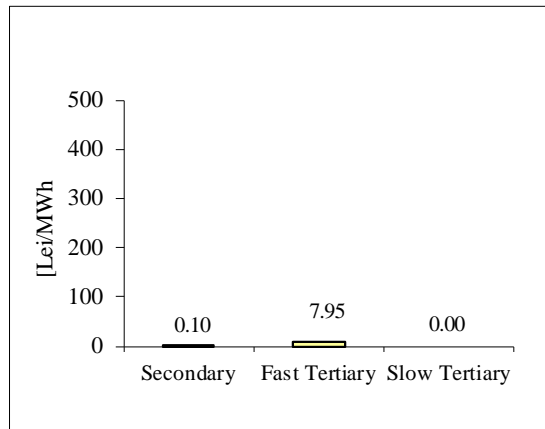
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Balancing Market

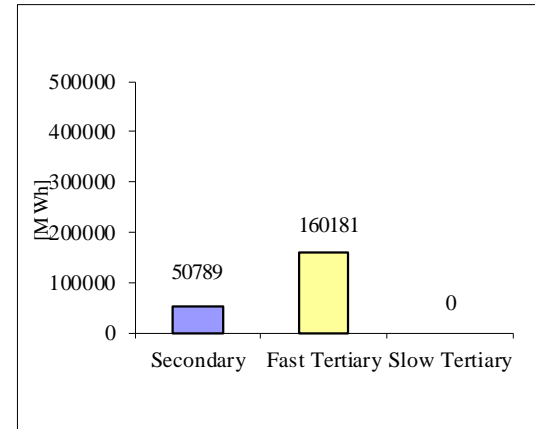
Balancing energy – Selected prices and quantities in February 2020

February 2020

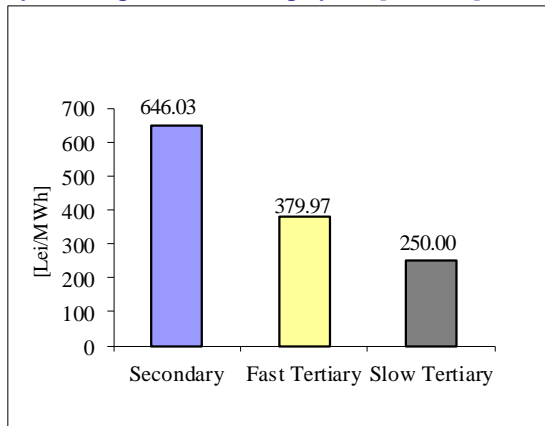
Downward regulation - average price [lei/MWh]



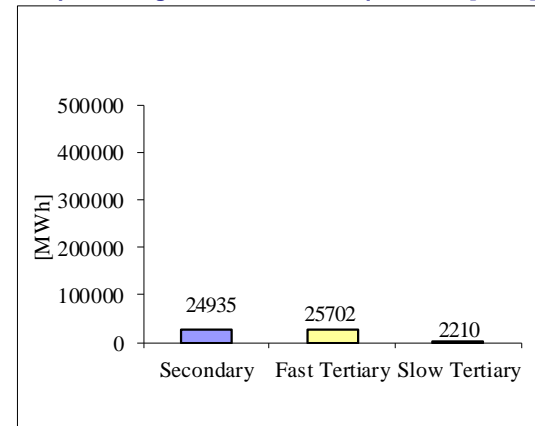
Downward regulation - selected quantities [MWh]



Upward regulation - average price [lei/MWh]



Upward regulation - selected quantities [MWh]



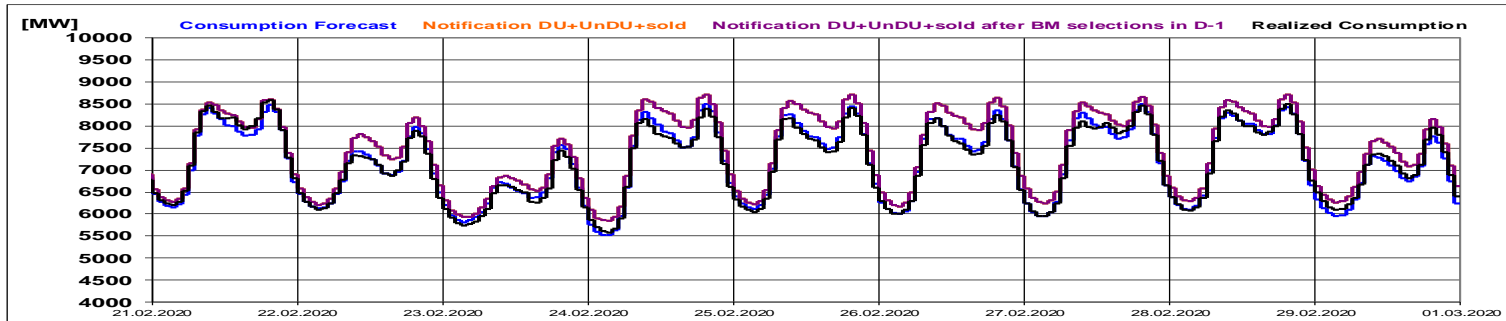
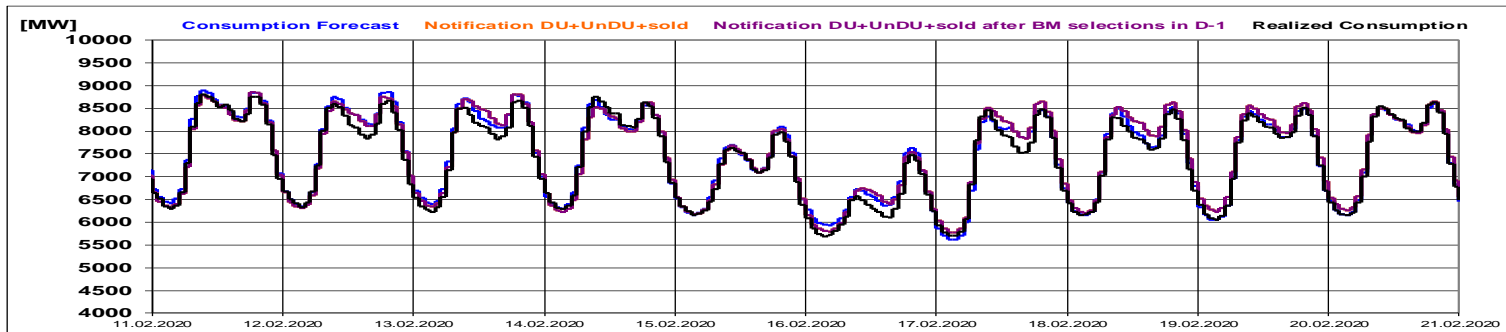
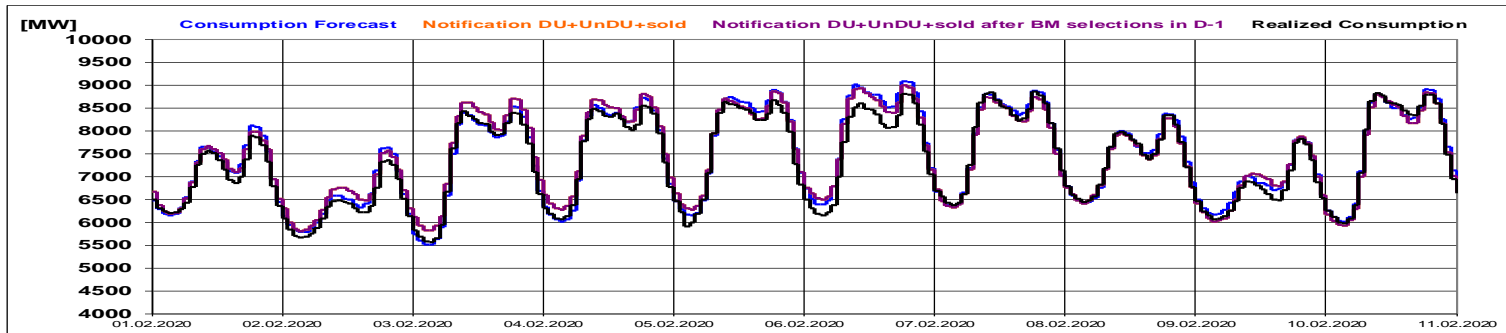


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Balancing Market

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



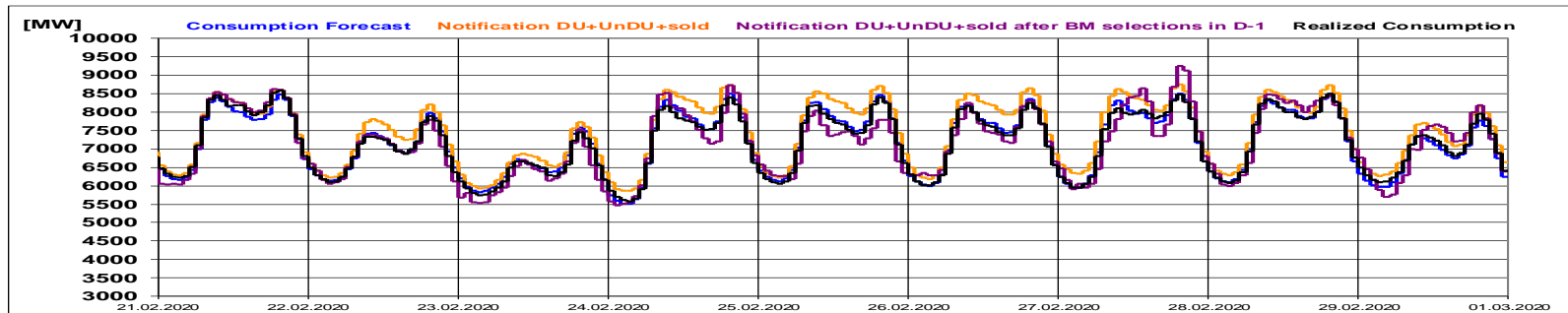
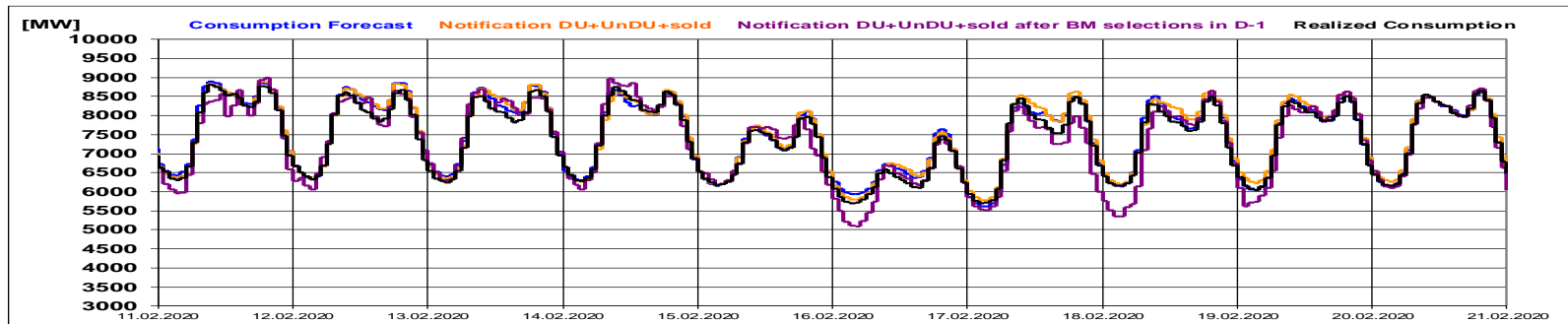
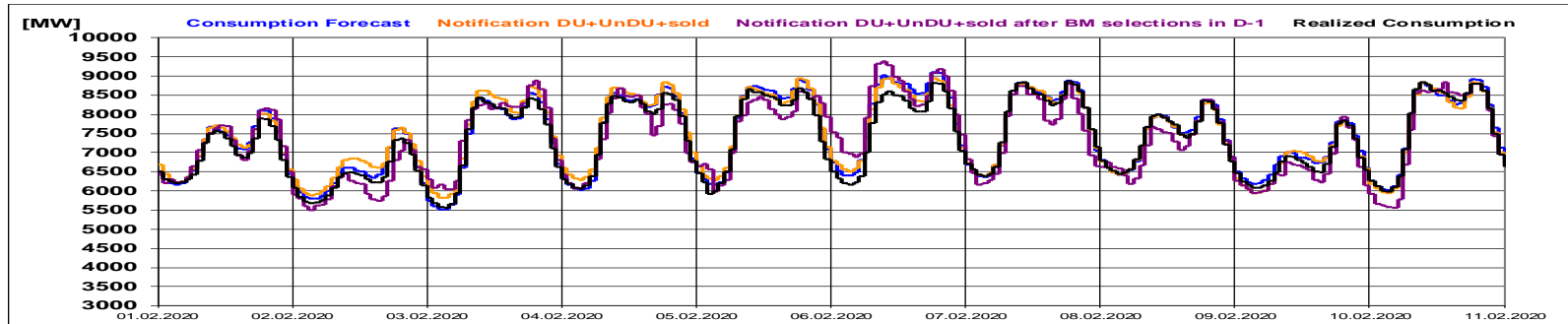


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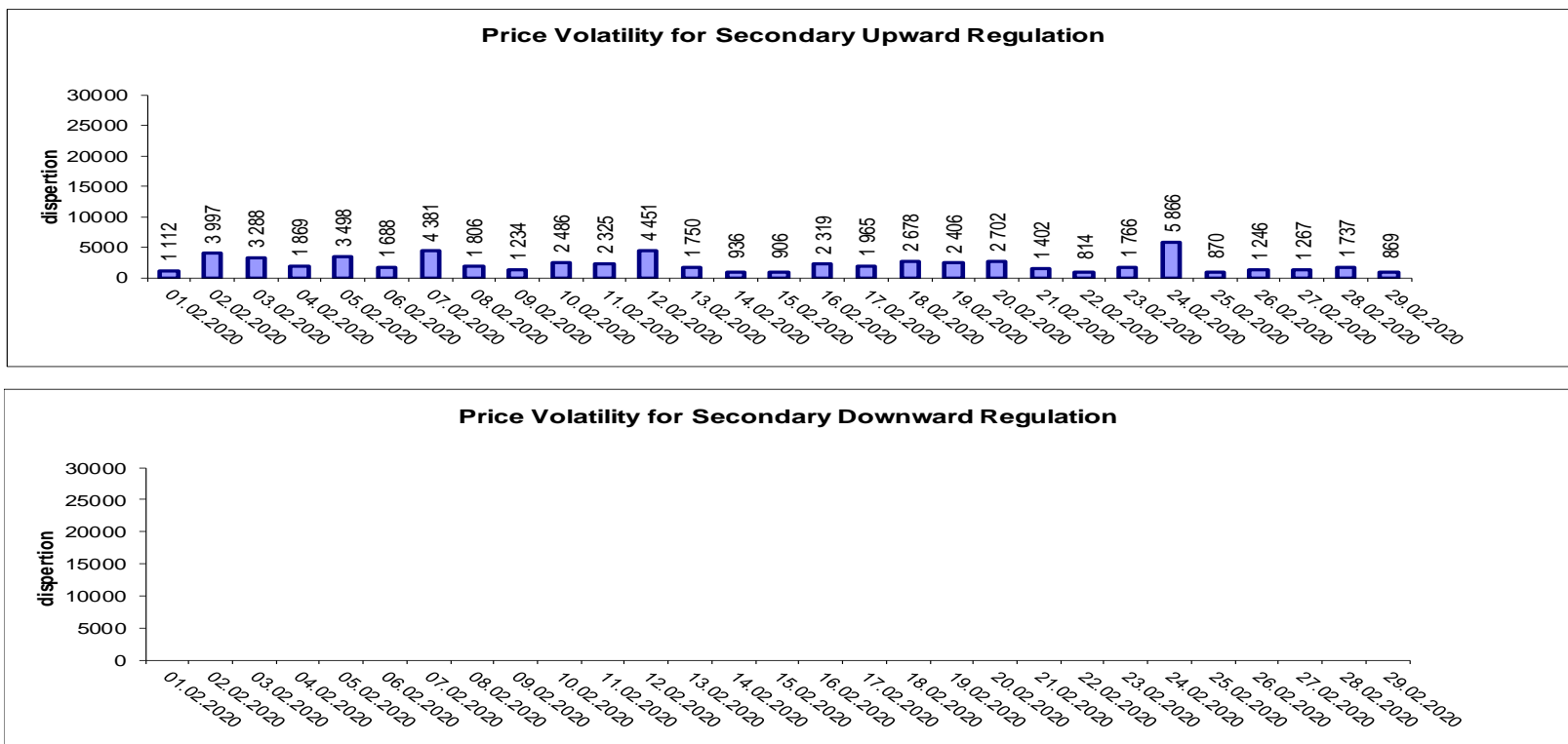
Balancing Market

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



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:

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



Email: Monitorizare.Piata@transelectrica.ro

Fax: 021 3035630