

WE LEAD THE POWER

Compania Națională de Transport al Energiei Electrice

MARKET MONITORING REPORT

Balancing Market

February 2012



Abbrevations

- 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 values of generated power was 7 961 MW and the actual internal gross consumption was 7 874 MW.
- The NDC consumption forecast was close to the actual consumption, the standard deviation being 1.46 %. Bigger differences were registered in the 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 deviation value was of 13.86 %. The greatest daily deviation, regarding the notifications, was registered in 10.02 (**28.23** %).
- The sum between notified production and total scheduled exchanges with the neighbouring power systems was smaller than the actual consumption with a monthly average of **1 204** MW.
- The energy used in February 2012 for balancing the power system and was 750 413 MWh (with an average power of 1 117 MW, which means **14.18** % from the internal gross consumption).
- The energy traded in February 2012 on Day Ahead Market was 936 324 MWh (with an average power of 1 345 MW, which means 17.09 % from the internal gross consumption).
- The total cost of the energy traded on the Balancing Market was **251 079 427** lei (with an average weighted price of 335 lei/MWh).







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).





	2012												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average
%BM	10.08	14.18											12.13
%DAM	16.24	17.09											16.66
%CG	0.00	0.00											0.00
%BM-CG	10.08	14.18											12.13

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Balancing Energy Market Transactions



[Lei]	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	nov	dec	average	Total
Cost / Upward	158 348 346	257 423 232		1.2.2									207 885 789	415 771 578
Income / Downward	6 202 222	6 343 805											6 273 014	12 546 027
CE Cost	0	0		Set									0	0
Total Cost + /	N 25			1										
Income -	152 146 124	251 079 427		1									201 612 775	403 225 551
1842	9 12	343		C										
Total (absolute sum)	164 550 569	263 767 037											214 158 803	428 317 606

CE – Congestion Energy

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



Day

Balancing Market

Standard deviation of physical notifications and consumption forecast against the actual consumption in February 2012





Balancing energy – Selected prices and quantities

• At the beginning of the month on the Balancing Market operated 120 BRPs and 18 market participants, holding 134 commercially operating dispatchable units.

February 2012															
Downward regulation_	Prices [lei/MWh]			Quar	Quantities [MWh]			Participants							
	Monthly	Maximum	Minimum	Total	Actually	Deviation		C1	C3	C1	C3	HHI	HHI		
													(actually		
	average			selected	delivered	%	Number	(sele	ected)	(actually	delivered)	(selected)	delivered)		
Secondary	63.50	150.20	1.00	45444.81	45444.81	0.00%	7	47.56%	85.51%	47.56%	85.51%	3047	3047		
Fast Tertiary	93.91	400.00	1.00	12720.04	10220.56	19.65%	8	47.21%	86.37%	52.32%	87.52%	3202	3527		
Slow Tertiary	115.02	400.00	1.00	27292.00	21969.55	1 <u>9.5</u> 0%	9	37.84%	84.24%	42.17%	86.14%	2908	3023		
				85456.85	77634.91	9.15%	24								
Upward regulation															
	Monthly	Maximum	Minimum	Total	Actually	Deviation		C1	C3	C1	C3	HHI	HHI		
													(actually		
	average			selected	delivered	%	Number	(sele	ected)	(actually	delivered)	(selected)	delivered)		
Secondary	384.46	400.00	259.00	38749.53	38749.53	0.00%	7	52.37%	87.10%	52.37%	87.10%	3392	3392		
Fast Tertiary	350.46	400.00	100.00	48901.95	47436.44	3.00%	11	88.64%	94.72%	89.75%	95.18%	7883	8076		
Slow Tertiary	382.39	400.00	100.00	602543.93	586591.72	2.65%	12	40.83%	89.30%	40.91%	89.76%	2927	2953		
				690195.41	672777.69	2.52%									



Balancing energy – Selected prices and quantities

Downward regulation - average price [lei/MWh]









Downward regulation - selected quantities [MWh]

Upward regulation - selected quantities [MWh]



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

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Indicators – NPS Slow Tertiary Regulation





Indicators – NPS Fast Tertiary Regulation







Indicators – NPS Secondary Regulation



 $Total_Offer(i) - \sum_{j=1}^{NPS} Offer_j(i) = Actualy_delivered(i)$

j = participants market index (ordered by size, *j*=1 is the biggest)



Indicators – NPS results synthesis

Centralized NPS										
feb.12	up				down					
C	NPS=1	NPS=2	NPS=3	NPS=4	NPS=1	NPS=2	NPS=3	NPS=4		
Slow Tertiary	6		100							
% hours on month	19.11	17.39	24.28	17.10	0.00	0.00	0.00	0.00		
% offered volumes on month	10.79	11.87	19.98	15.49	0.00	0.00	0.00	0.00		
Fast Tertiary	2									
% hours on month	5.89	5.32	7.18	5.60	0.00	0.00	0.00	0.00		
% offered volumes on month	5.57	5.19	6.70	5.27	0.00	0.00	0.00	0.00		
Secondary	1 1									
% hours on month	16.24	16.81	19.97	12.93	19.11	22.70	22.56	11.06		
% offered volumes on month	10.25	11.77	16.98	11.49	9.08	15.49	18.34	10.27		



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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