



STATISTICAL POCKETBOOK 2025





ESO is responsible for the integrated operational planning, coordination, and control of the Bulgarian power system, as well as its parallel synchronous operation with neighbouring grids. The company's activities encompass transmission grid operation, maintenance, and ensuring reliable system performance. ESO also procures ancillary services and provides maintenance and repair services across the energy sector. In addition, it manages power transit through the national grid and operates the electricity balancing market.

As part of its parallel synchronous operation with ENTSO-E, ESO plays a key role in the Balkan region. The company consistently strives to enhance transmission efficiency and asset management by adopting and implementing advanced methods for system planning, control, and monitoring.

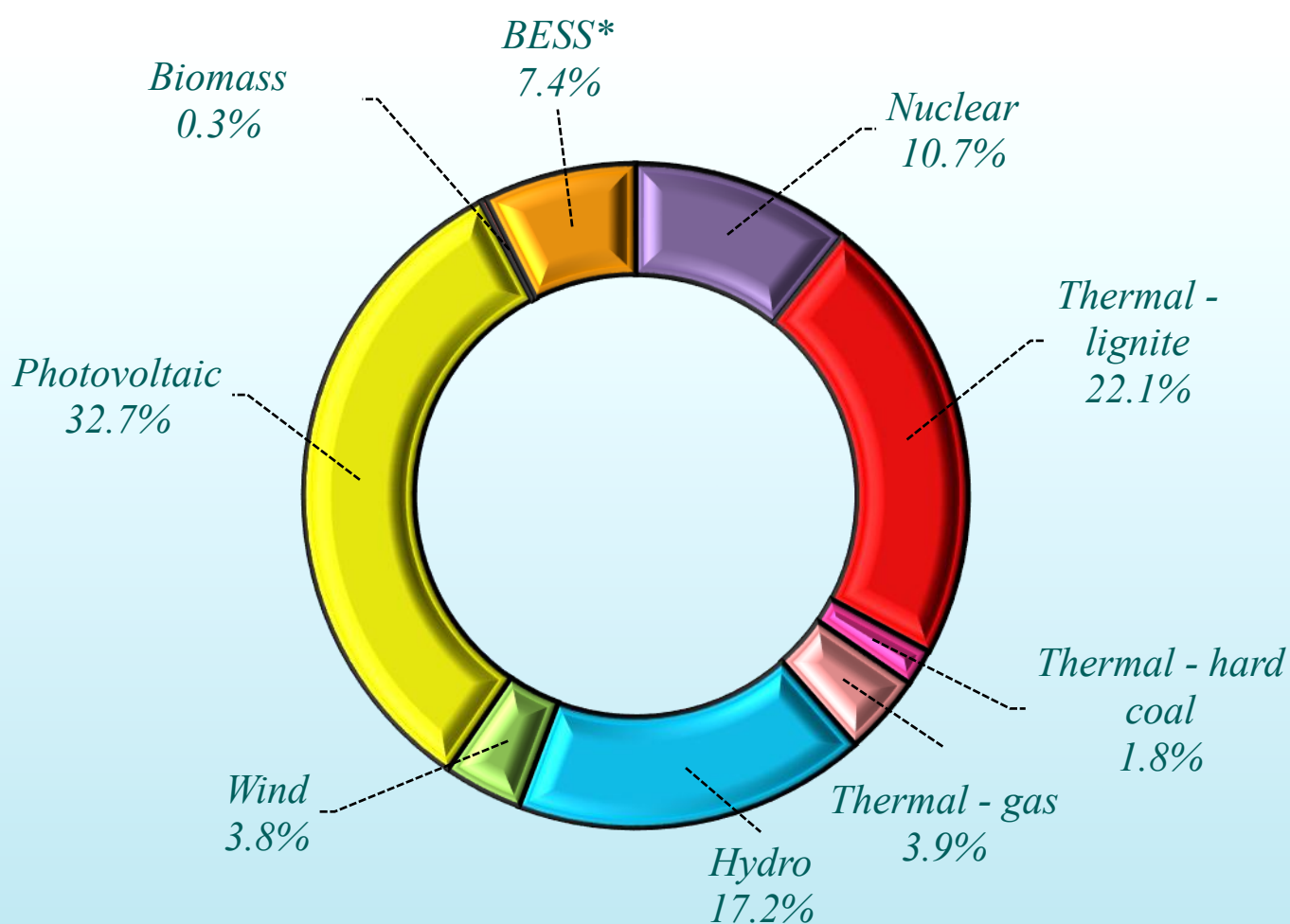
INSTALLED GENERATION CAPACITIES

2025

Generation type	MW	Variation 2025/2024, %	Share, %
Nuclear	2 000	0.0	10.7
Thermal - lignite	4 119	0.0	22.1
Thermal - hard coal	336	-5.6	1.8
Thermal - gas	733	1.3	3.9
Hydro	3 218	0.2	17.2
Wind	715	0.6	3.8
Photovoltaic	6 104	33.6	32.7
Biomass	60	-22.1	0.32
BESS*	1 382	1514.7	7.40
Total	18 668	17.8	100.0

*Battery Energy Storage Systems

Installed capacity shares by plant type

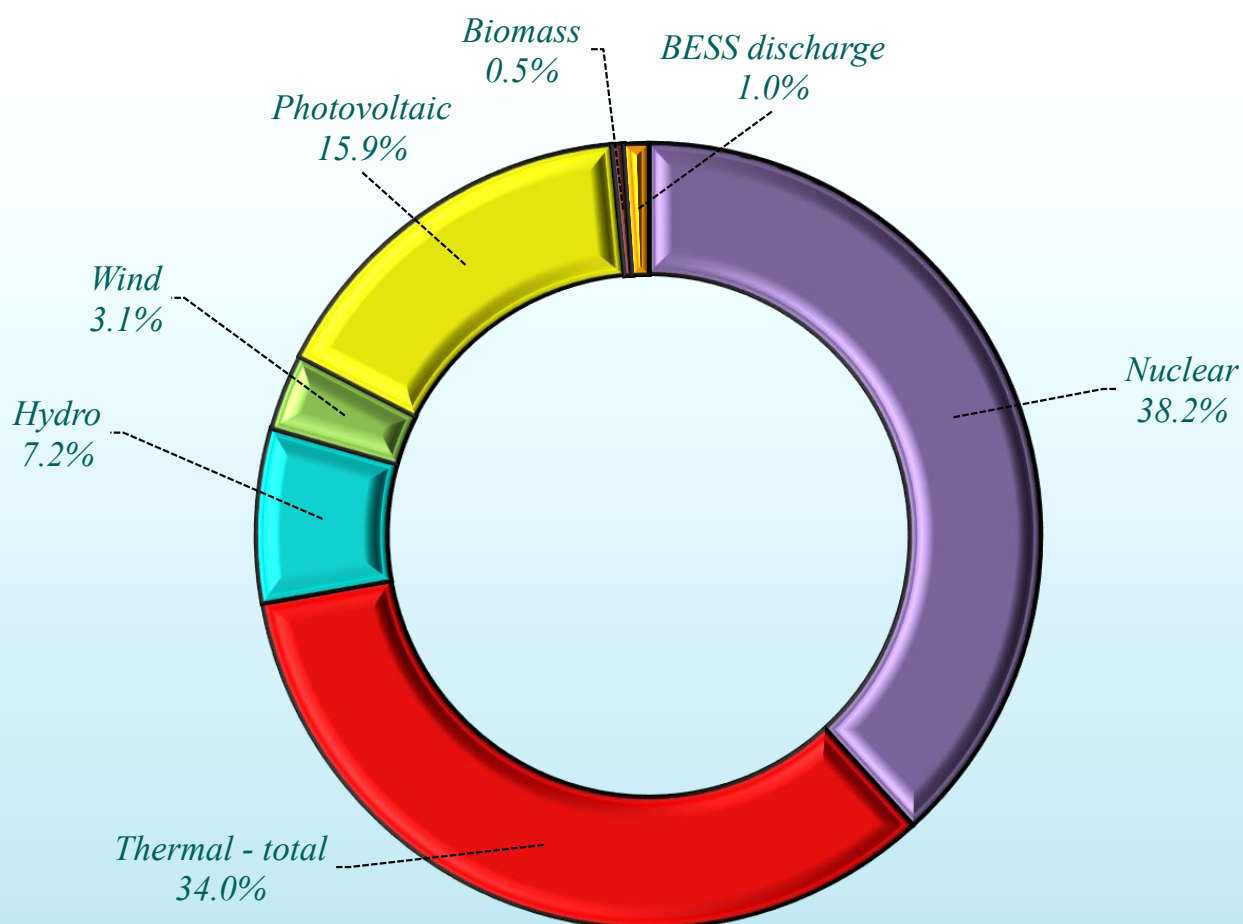


GROSS GENERATION

2025

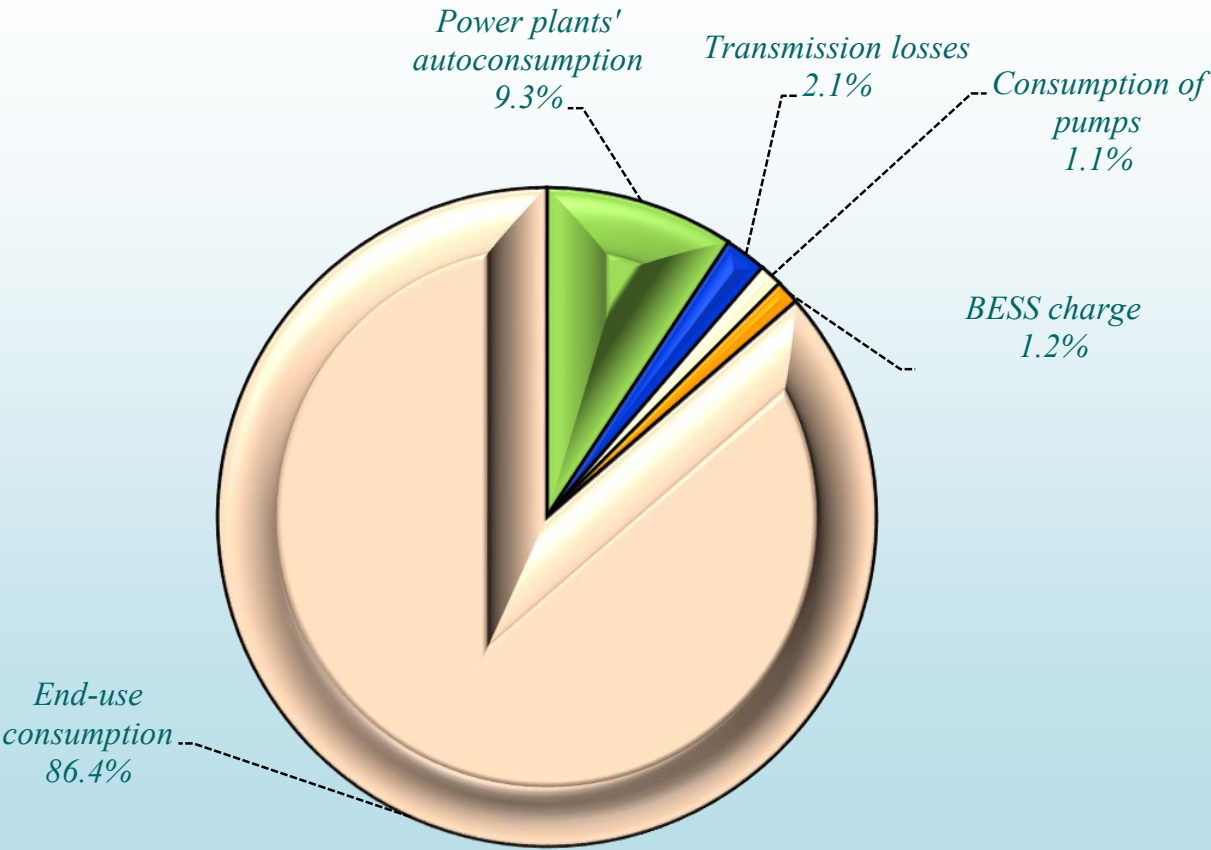
Generation type	MWh	Variation 2025/2024, %
Nuclear	15 365 517	-2.6
Thermal - total	13 660 045	7.3
Hydro	2 893 919	-0.2
Wind	1 262 535	-8.3
Photovoltaic	6 408 953	22.8
Biomass	200 532	-6.6
BESS discharge	406 590	-
Total	40 198 090	5.2

Annual gross generation shares by plant type

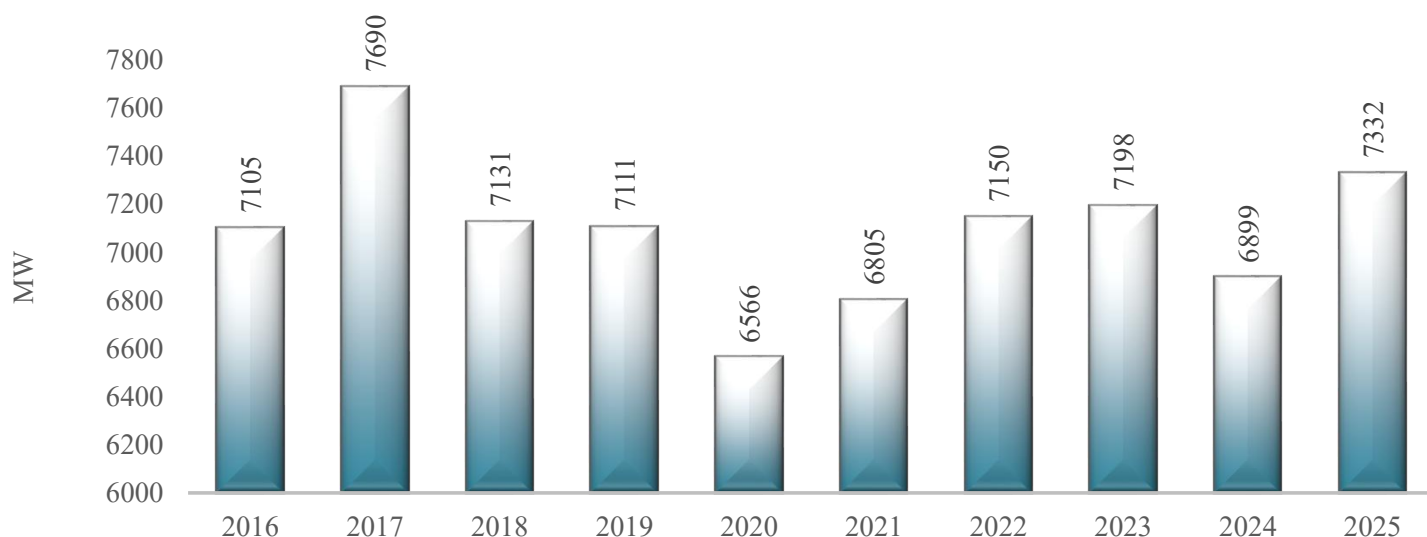


Consumption type	MWh	Variation 2025/2024, %	Share, %
Power plants' autoconsumption	3 601 017	4.0	9.3
Transmission losses	803 354	1.0	2.1
Consumption of pumps	442 596	155.8	1.1
BESS charge	452 056	3013.6	1.16
End-use consumption	33 577 276	2.4	86.4
Total	38 876 298	4.4	100.0

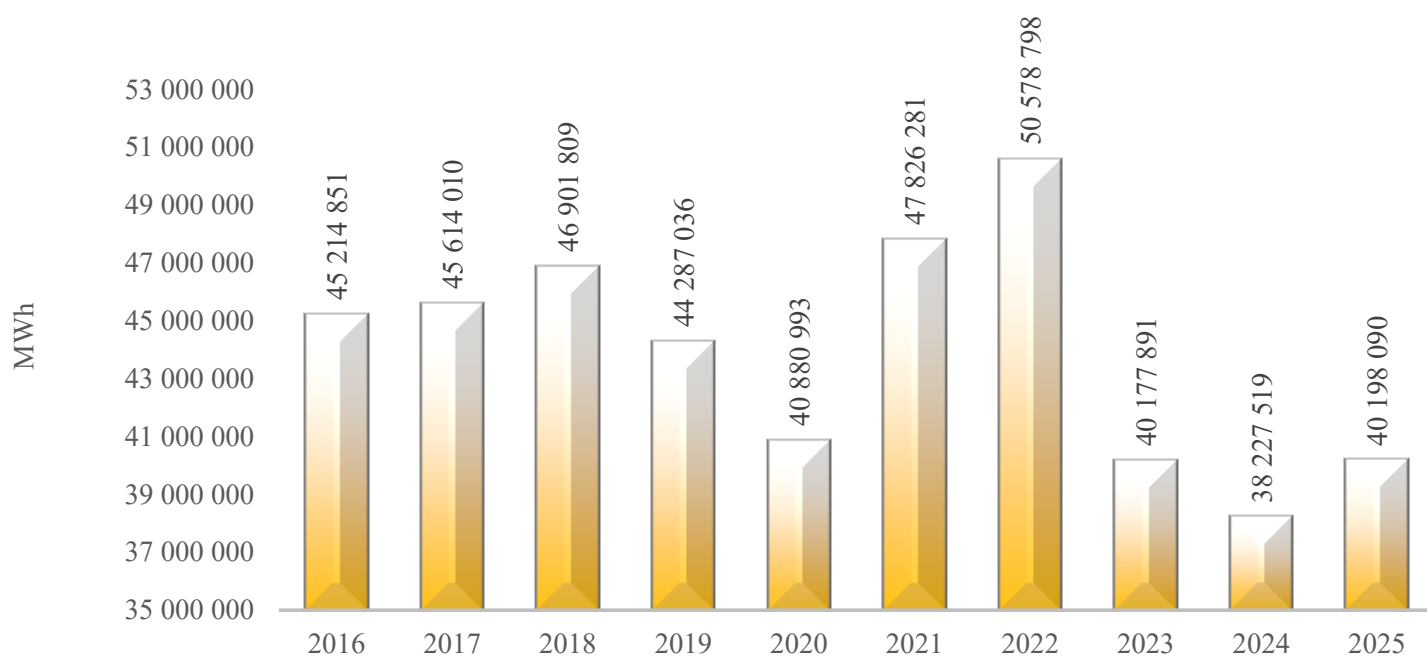
Gross consumption shares by type



ABSOLUTE ANNUAL GROSS PEAK LOADS



ANNUAL GROSS GENERATION



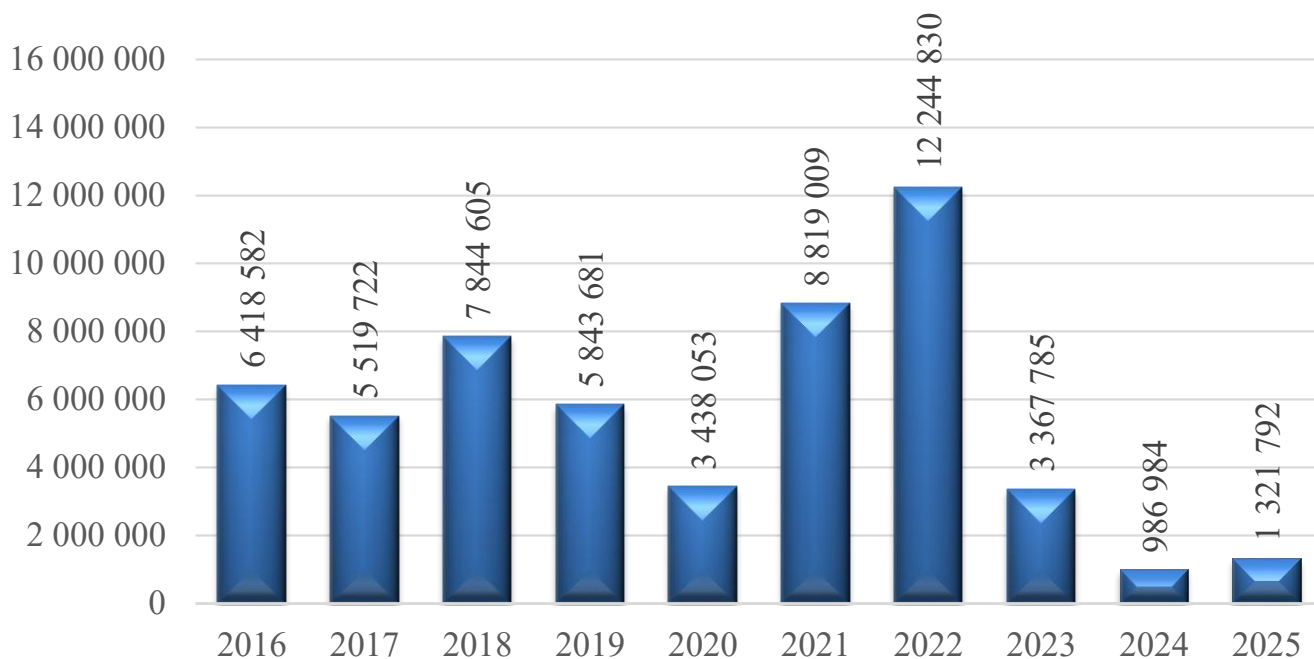
CROSS BORDER PHYSICAL EXCHANGES

2025

Exchange type	MWh	Variation 2025/2024, %
Balance (export-import)	1 321 792	33.9

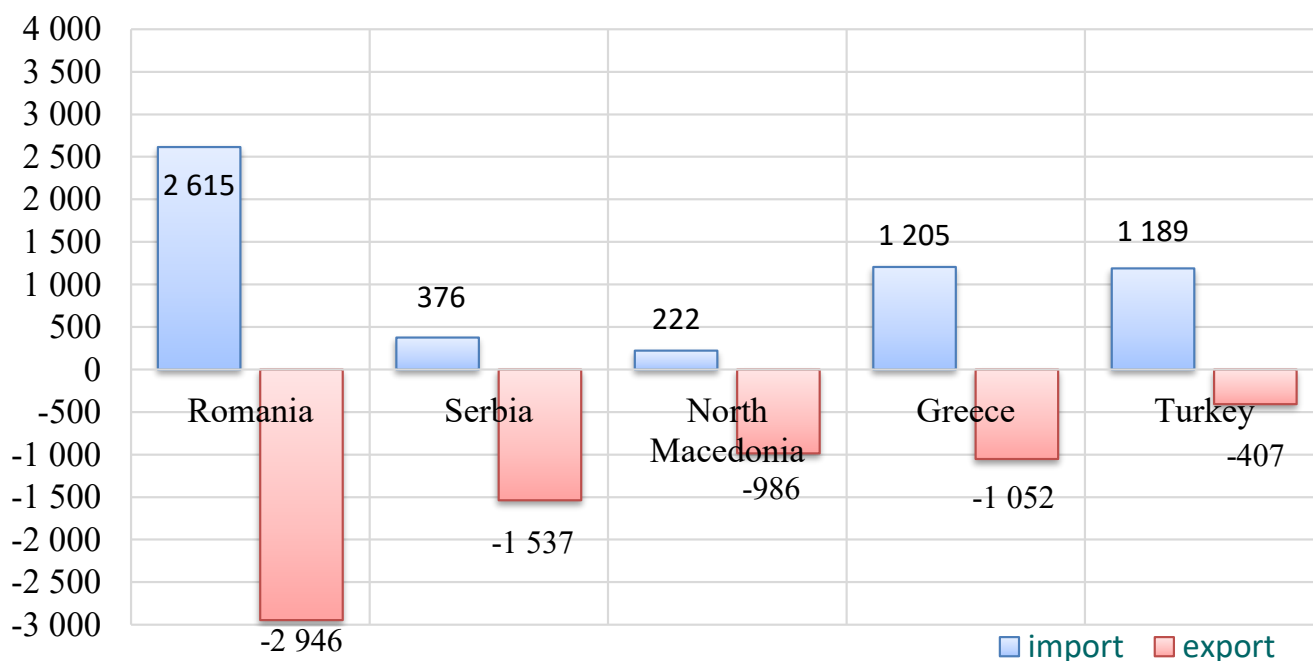
MWh

Annual physical exchanges - balance (export-import)

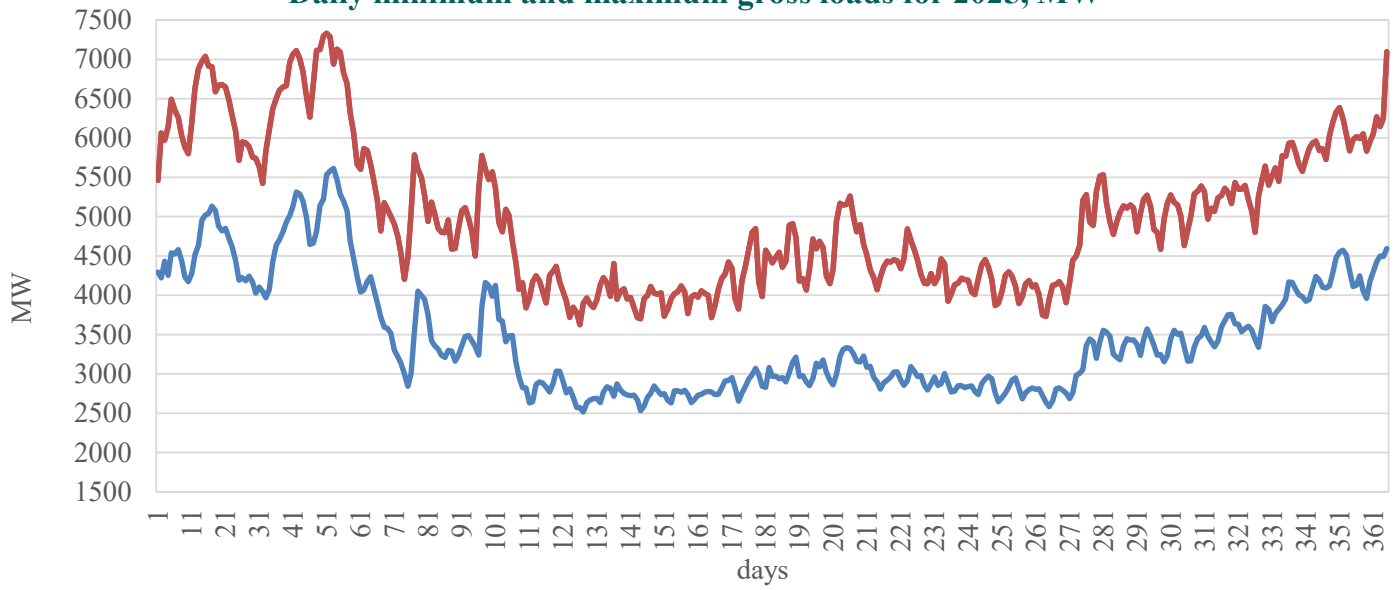


GWh

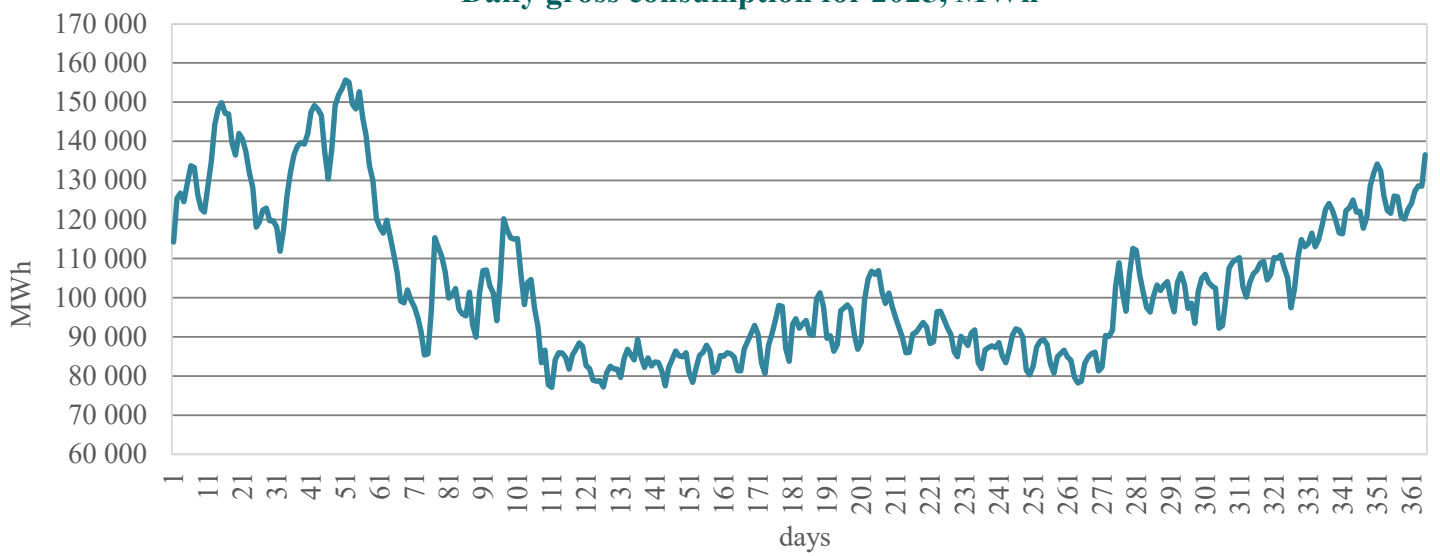
Annual physical exchanges with neighbouring countries 2025, GWh



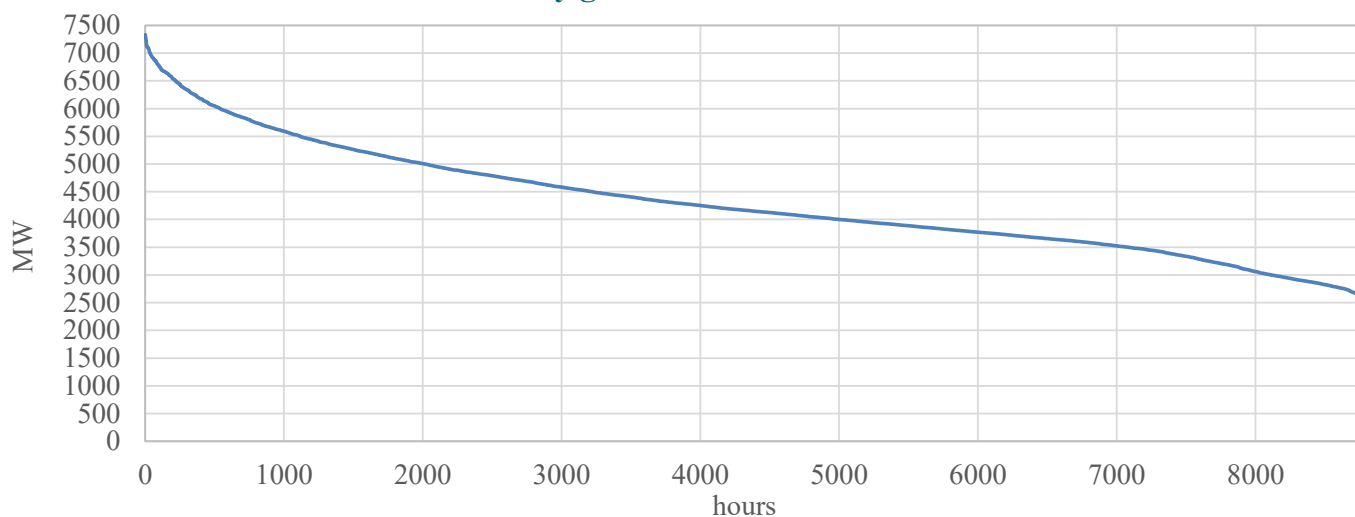
Daily minimum and maximum gross loads for 2025, MW



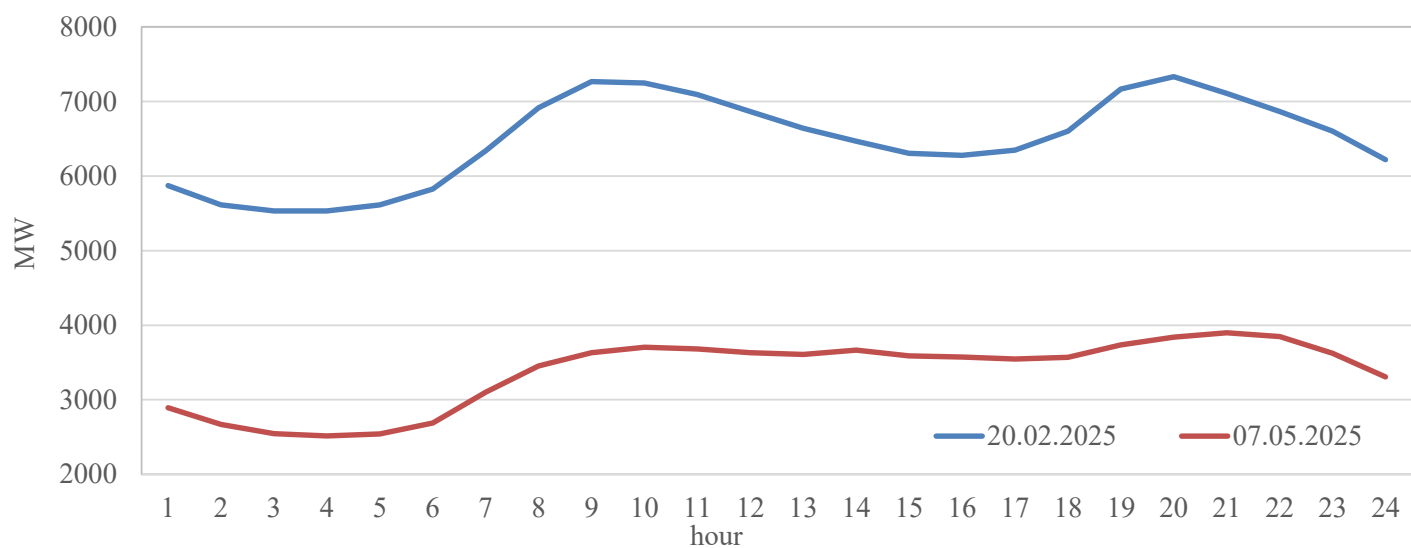
Daily gross consumption for 2025, MWh



Annual hourly gross loads duration curve for 2025



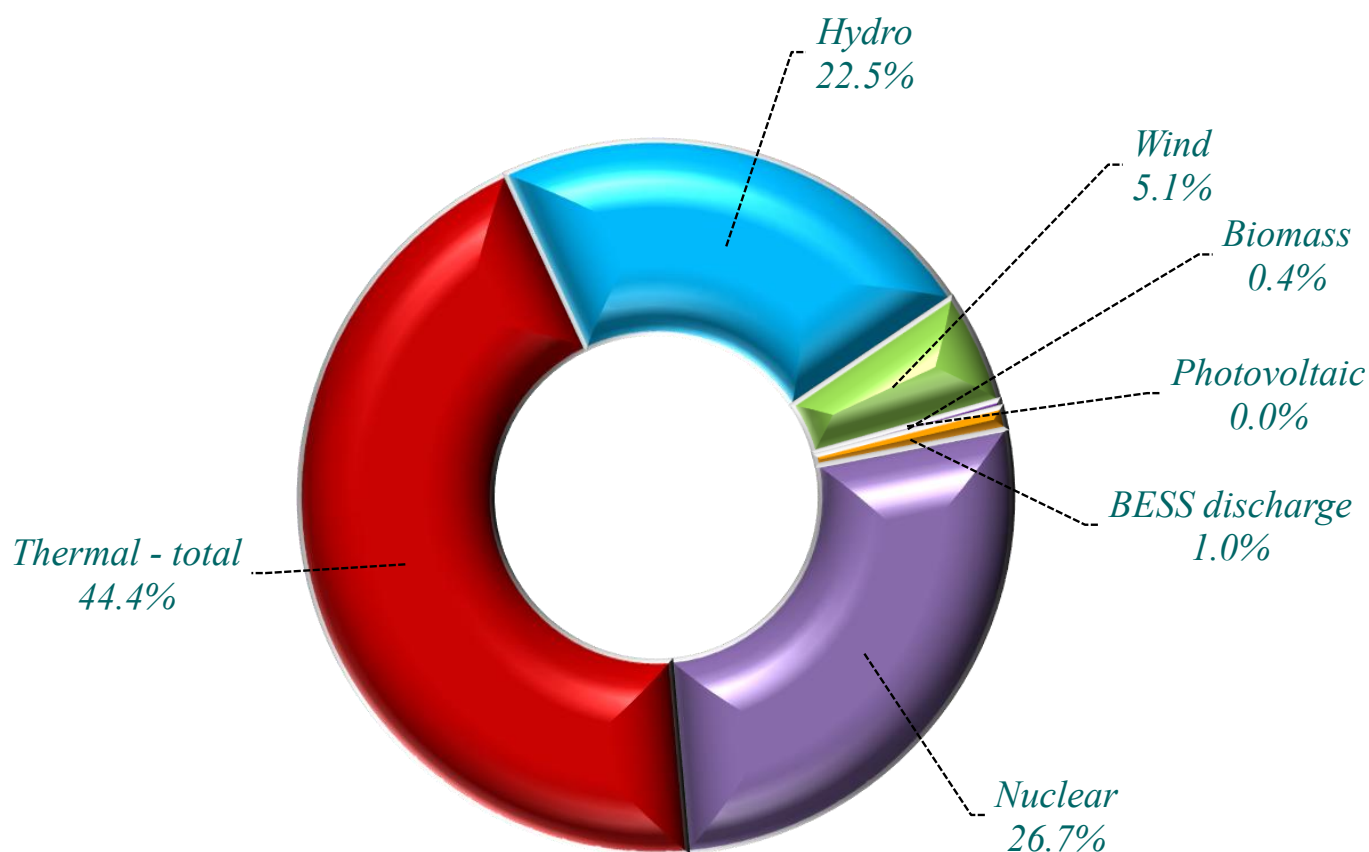
Hourly load curves for the days with the absolute annual minimum and maximum gross loads 2025



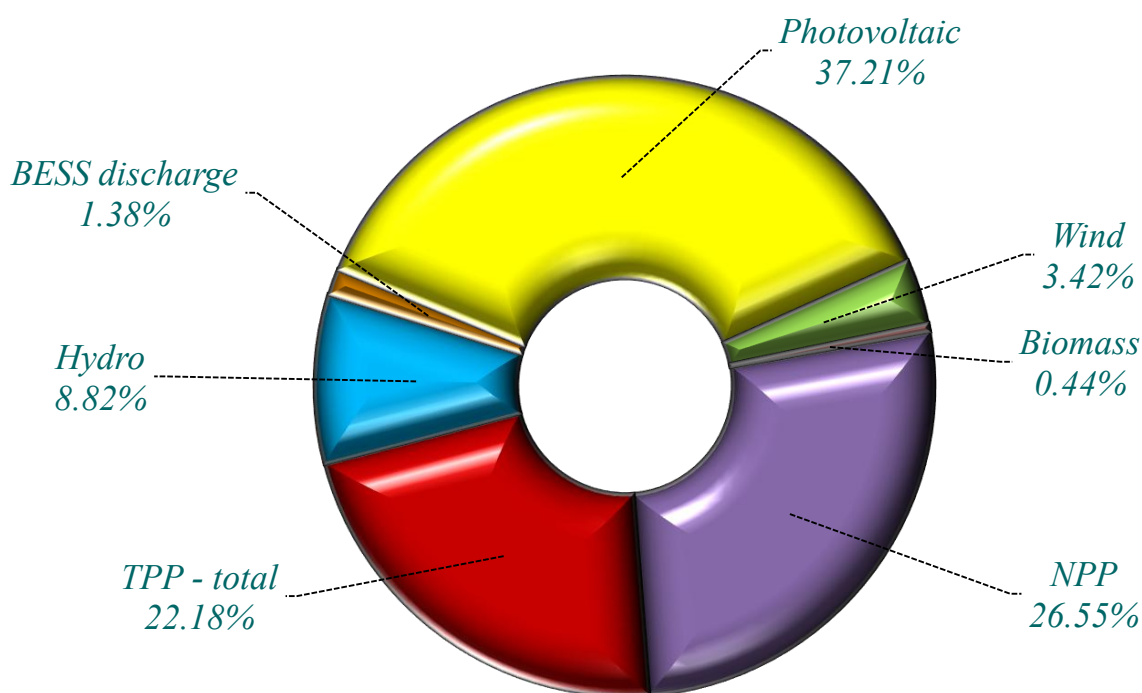
Power system gross balance for the absolute annual peak load hour - 20 February 2025, 19:00-20:00 EET

Generation type	MW
Nuclear	2079
Thermal - total	3465
Hydro	1754
Wind	394
Photovoltaic	0
Biomass	28
BESS discharge	75
Total	7795
Export	-463
BG peak load	7332

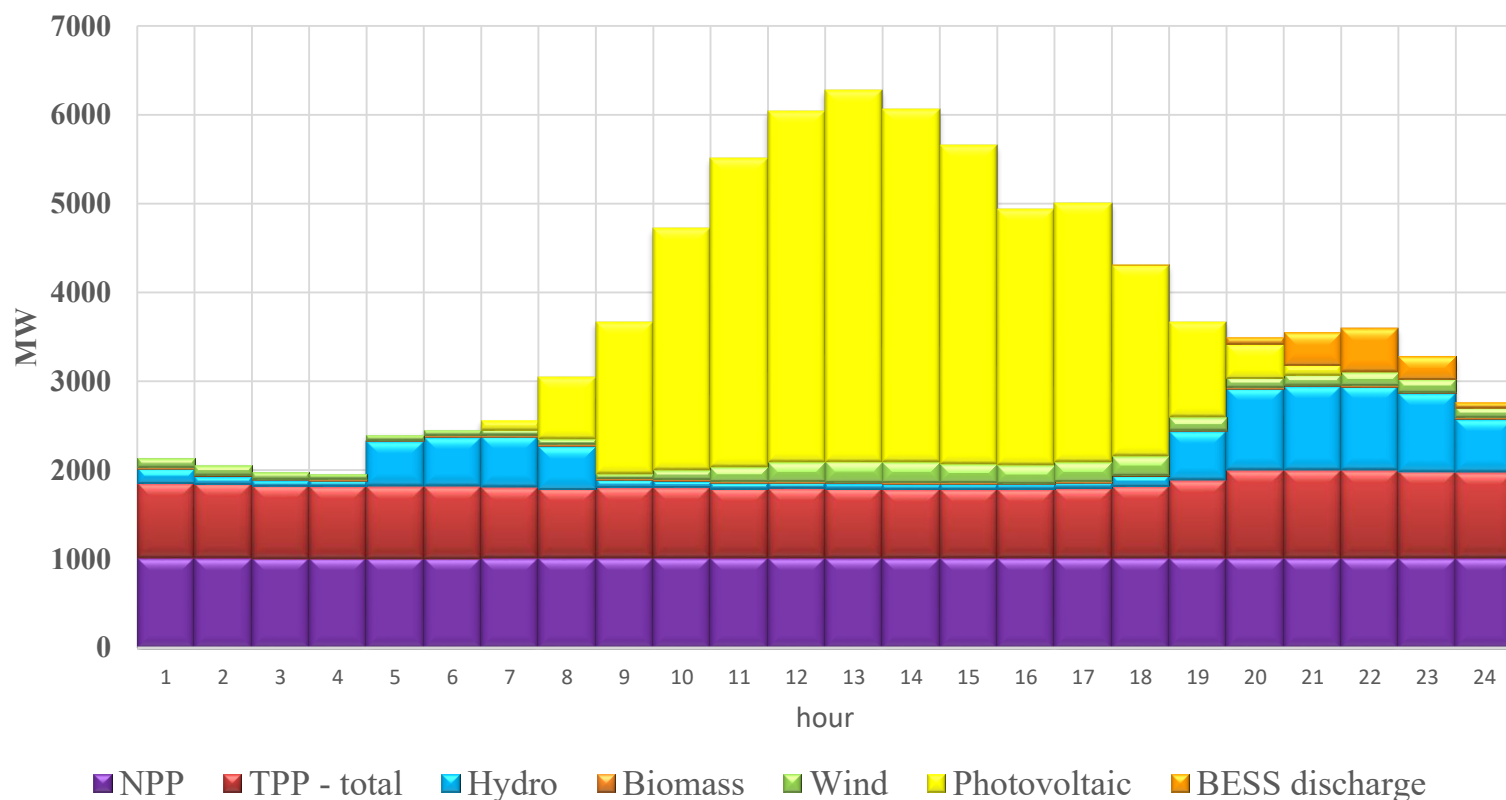
Generation shares by plant type at the absolute annual peak gross load hour



Shares by plant type in the total daily gross generation for the day with the highest share (41.07%) of RES (wind, photovoltaic, biomass) - 27 July 2025



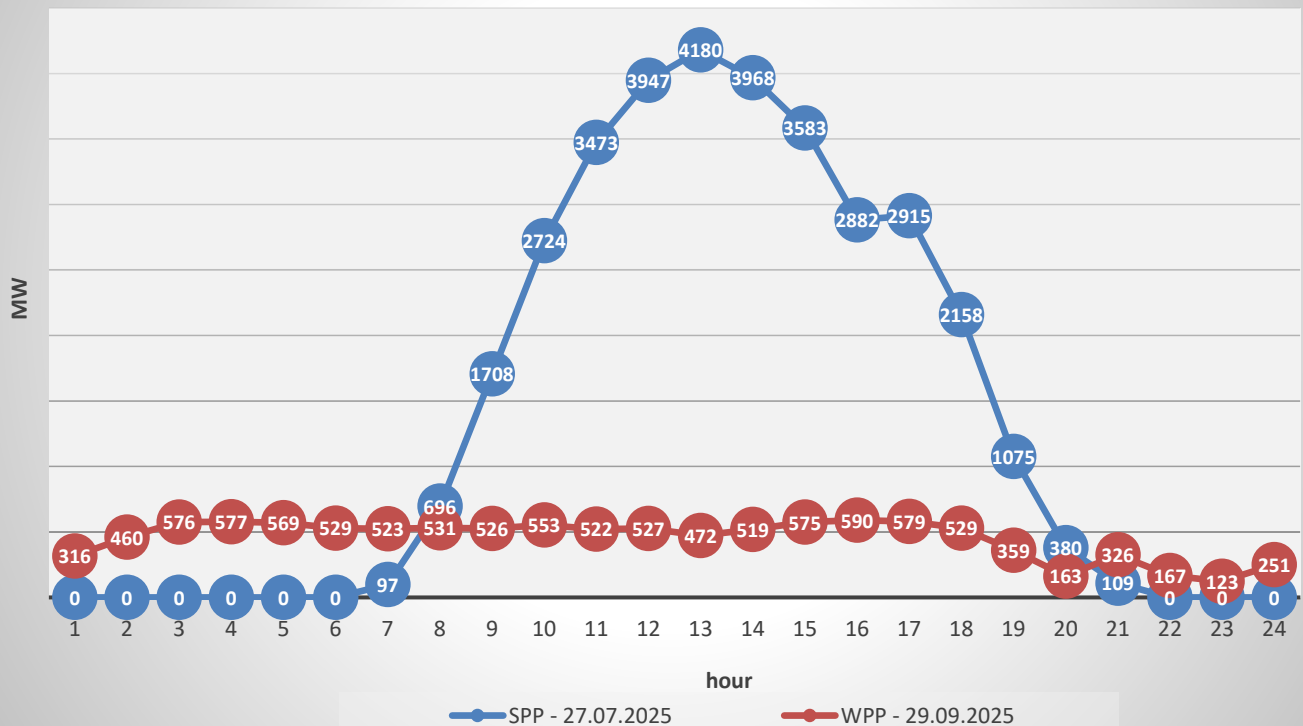
Hourly gross generations by plant type for the day with the highest share (41.07%) of RES (wind, photovoltaic, biomass) in the gross total daily generation 27 July 2025



**Highest shares in the gross total daily generation by plant type (groups)
and dates of occurrence in 2025**

Plant type / group	%	Occurrence date
Hydro+Wind+Photovoltaic+Biomass	50.60	Tue 20.05.2025
Wind+Photovoltaic+Biomass	41.29	Sun 27.07.2025
Wind+Photovoltaic	40.85	Sun 27.07.2025
Hydro	16.84	Fri 16.05.2025
Photovoltaic	37.81	Sat 26.07.2025
Wind	10.76	Fri 03.10.2025
Biomass	0.87	Fri 16.05.2025
Nuclear	55.64	Wed 17.09.2025
BESS discharge	2.91	Mon 03.11.2025
Thermal - total	56.00	Sun 16.02.2025

**Daily generation curves of Wind and Photovoltaic power plants for the
respective days with the highest (MW) hourly generation in 2025**



Daily maximum values	Energy		Capacity	
	MWh	date	MW	date
National generation	163 757	Wed 12.02.2025	8 474	Wed 12.02.2025
National consumption	155 649	Thu 20.02.2025	7 332	Thu 20.02.2025
Nuclear generation	49 997	Tue 18.03.2025	2 088	Thu 06.02.2025
Thermal generation	80 530	Fri 17.01.2025	3 536	Fri 17.01.2025
Hydro generation	14 487	Fri 28.11.2025	1 754	Thu 20.02.2025
PV generation	36 165	Mon 23.06.2025	4 180	Sun 27.07.2025
Wind generation	12 477	Sun 07.12.2025	590	Fri 28.03.2025
Biomass generation	636	Thu 16.01.2025	29	Thu 16.01.2025
BESS discharge	3 490	Thu 18.12.2025	942	Wed 31.12.2025
Net export	27 447	Mon 23.06.2025	2 714	Fri 25.04.2025

Day with	Value	Date
highest consumption, MWh	155 649	Thu 20.02.2025
lowest consumption, MWh	77 105	Mon 21.04.2025
highest peak load, MW	7 332	Thu 20.02.2025
lowest peak load, MW	3 625	Tue 06.05.2025
lowest minimum load, MW	2 515	Wed 07.05.2025
highest minimum load, MW	5 610	Sat 22.02.2025
highest load variation range, MW	2 507	Wed 31.12.2025
lowest load variation range, MW	908	Sat 03.05.2025
highest density coefficient of the daily load curve	0.913	Sat 14.06.2025
lowest density coefficient of the daily load curve	0.794	Sun 09.03.2025
highest positive hourly load ramp, MW	610	Sun 05.01.2025
highest negative hourly load ramp, MW	-601	Wed 31.12.2025

Value	Number of days	Variation	Dates of occurrence
Longest series of consecutive days with increase of the maximum load	10	1 688 MW	02.02 - 11.02.2025
Longest series of consecutive days with decrease of the maximum load	7	1 528 MW	24.02 - 02.03.2025
Longest series of consecutive days with increase of the daily demand	6	27 735 MWh	02.02 - 07.02.2025
Longest series of consecutive days with decrease of the daily demand	7	36 124 MWh	25.02 - 03.03.2025

Value	Variation	Dates of occurrence
Highest increase of the maximum load between two consecutive days	853 MW (15.94 %)	05.04 - 06.04.2025
Highest decrease of the maximum load between two consecutive days	684 MW (16.43 %)	27.06 - 28.06.2025
Highest increase of the daily demand between two consecutive days	18 473 MWh (19.07%)	17.03 - 18.03.2025
Highest decrease of the daily demand between two consecutive days	10 786 MWh (11.03%)	27.06 - 28.06.2025

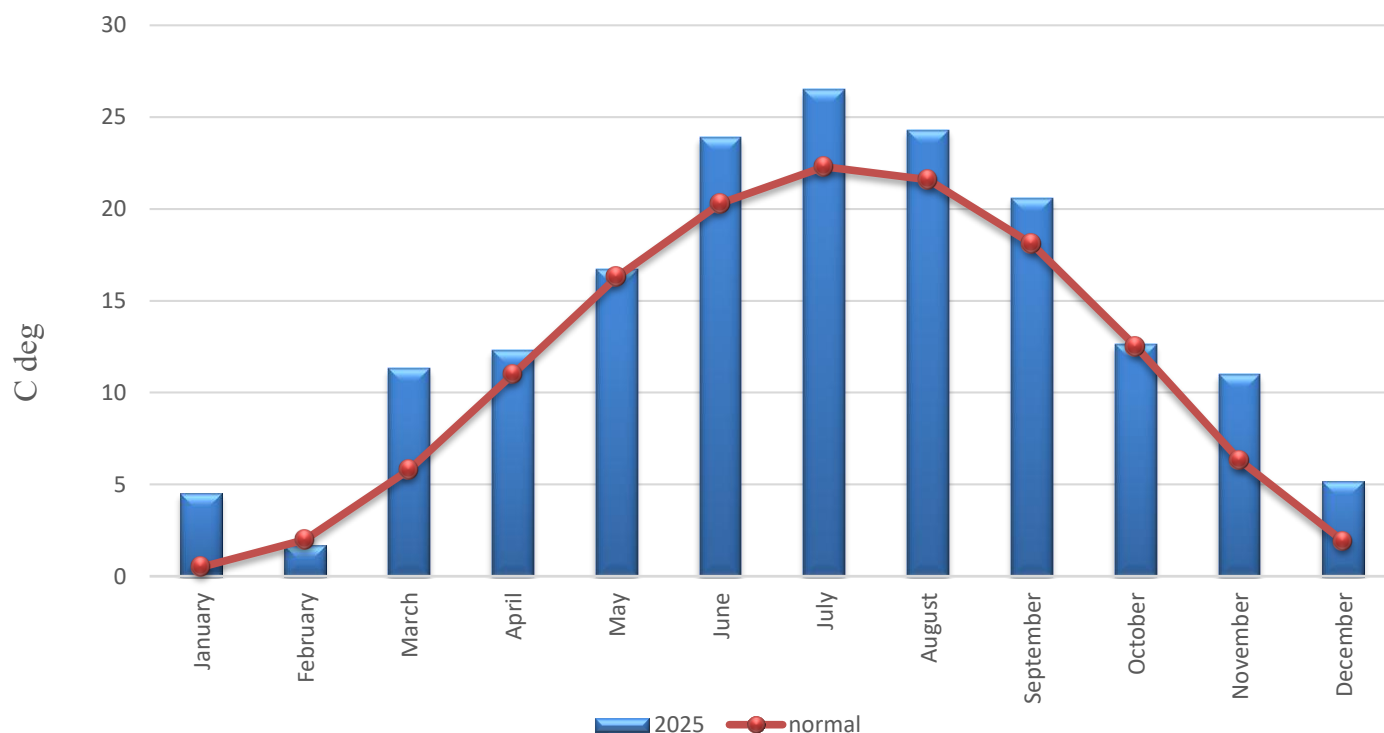
TEMPERATURE SENSITIVITIES OF TYPICAL LOADS FOR WORKING DAYS PER PERIOD TYPE, MW/C'

Typical load	Heating period	Cooling period
night minimum	-127	52
day maximum	-156	132
evening maximum	-144	123

AUTOMATIC MEASURING STATIONS OWNED BY ESO EAD

Station type	Quantity	Communication type
meteorological	19	SCADA - real time
rain measuring	23	GSM - modem
hydrometric	8	GSM - modem
dam level measuring	3	GSM - modem
anemometric	7	SCADA - real time

Registered in 2025 and normal average monthly temperatures for Bulgaria



SUBSTATIONS

2025

Substation type	Quantity	Transformer capacity MVA
400 kV	14	12 033
220 kV	17	6 160
110 kV	272	16 646
Total	303	34 839

TRANSMISSION LINES

Transmission line type	Length km
OPL 400 kV	3 102
OPL 220 kV	2 711
OPL 110 kV	10 294
OPL 60 kV	12
CPL 110 kV, 220 kV and 400 kV	34
Total	16 152

Note: OPL - Overhead Power Line

CPL - Cable Power Lines

INTERCONNECTING TRANSMISSION LINES 400 kV

Transmission line	Neighbouring country	Neighbouring operator	Length, km
Druzhiba	Romania	TEL	124
Tsantsareni 1	Romania	TEL	116
Tsantsareni 2	Romania	TEL	116
Saedinenie	Romania	TEL	129
Nishava	Serbia	EMS	123
Ruen	North Macedonia	MEPSO	150
Pirin	Greece	IPTO	177
Sakar	Turkey	TEIAS	149
Odrin	Turkey	TEIAS	159
Perperikon	Greece	IPTO	153

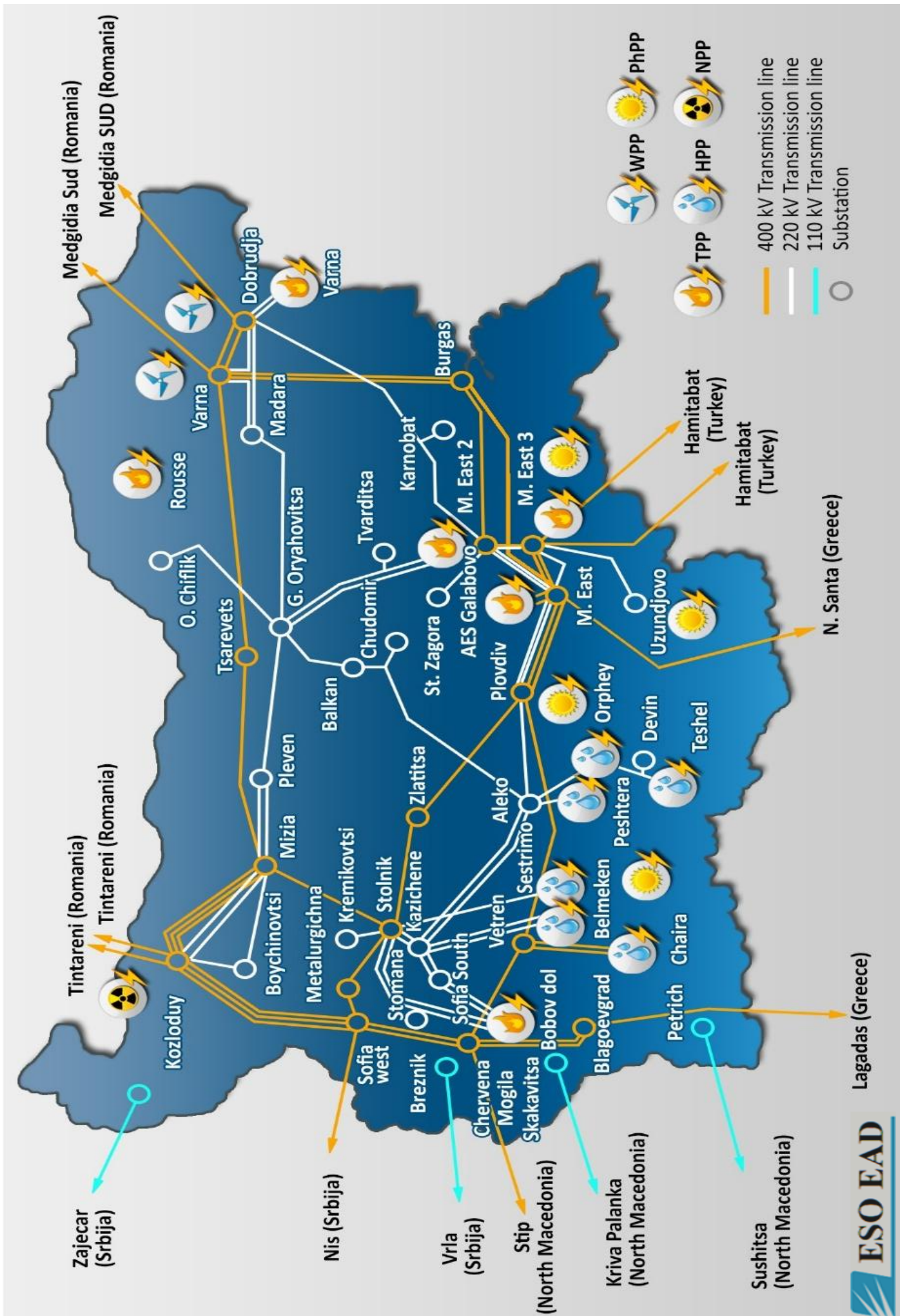
Activated balancing energy

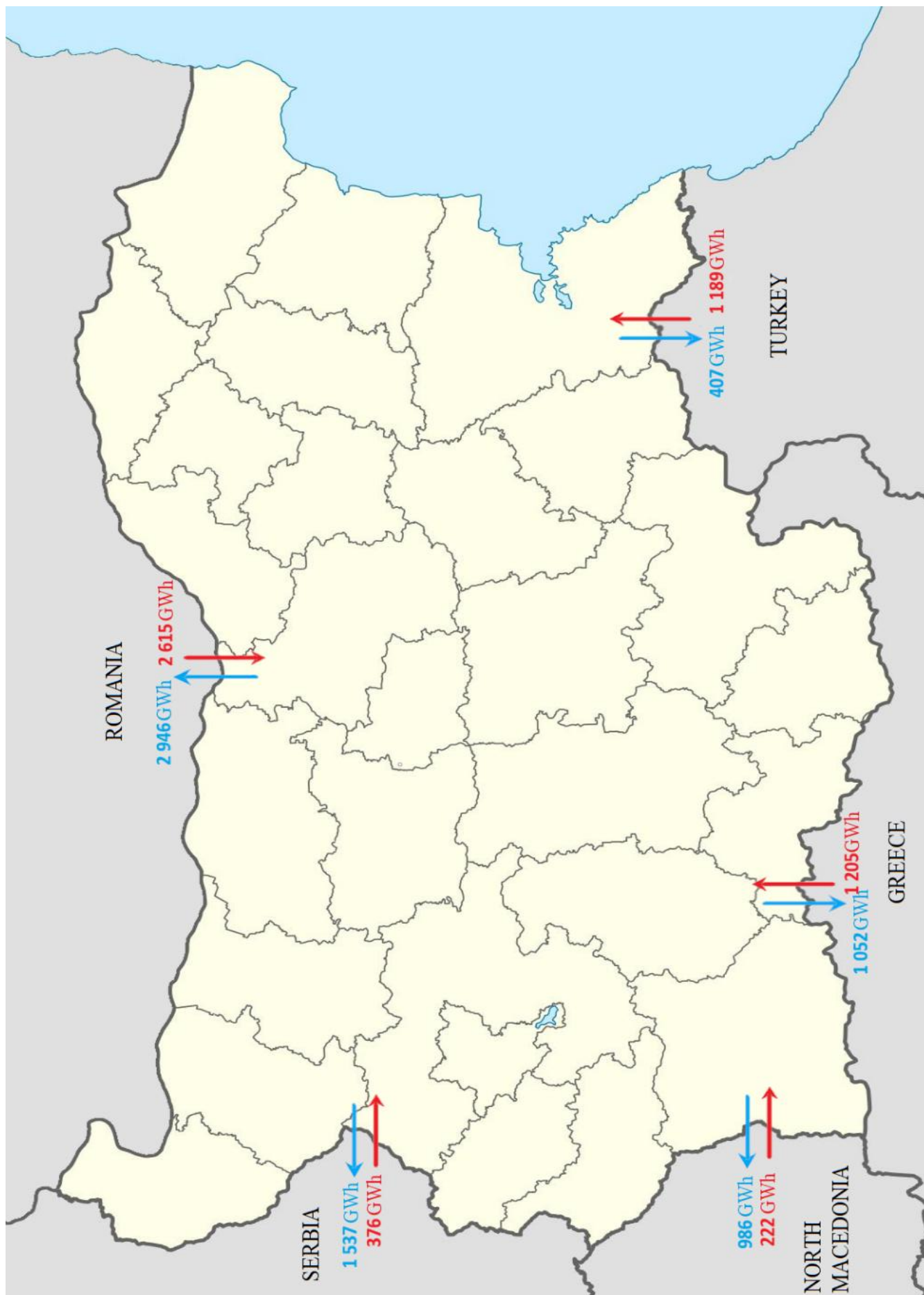
Month	REGULATION UPWARD, MWh	REGULATION DOWNWARD, MWh
January	14 611	17 945
February	20 339	16 392
March	14 805	21 214
April	9 427	14 090
May	8 732	10 627
June	7 258	12 340
July	6 643	12 229
August	6 606	12 711
September	6 559	12 381
October	15 726	11 551
November	11 120	7 039
December	11 533	9 940

Average monthly imbalance price

Month	Power System in DEFICIT, BGN/MWh	Power System in SURPLUS, BGN/MWh
January	477.22	-22.87
February	510.64	-51.88
March	488.24	-119.75
April	466.97	-21.07
May	455.50	-0.77
June	455.17	-10.73
July	465.51	9.41
August	452.95	4.37
September	479.64	15.20
October	504.23	-8.32
November	473.58	19.72
December	462.61	12.03

220 kV and 400 kV TRANSMISSION NETWORK





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