

SECURITY OF SUPPLY COORDINATION GROUP

11TH MEETING OF SUB-GROUP FOR ELECTRICITY

**Vienna
13th December 2022**

WINTER OUTLOOK REPORT 2022/2023 -EMS JSC

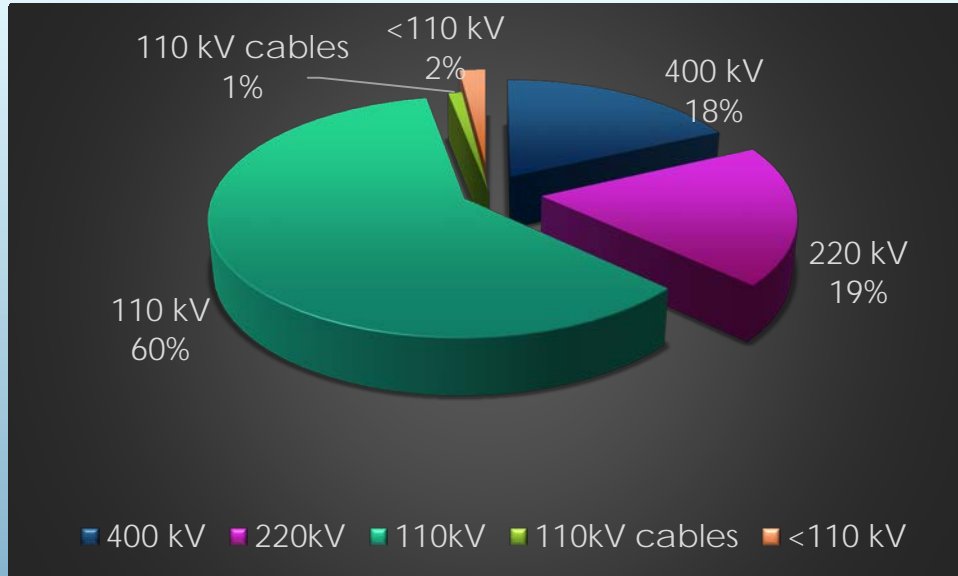
MARIJA DJORDJEVIĆ- EMS JSC

WINTER OUTLOOK REPORT 2022/2023

DATA OF TRANSMISSION SYSTEM

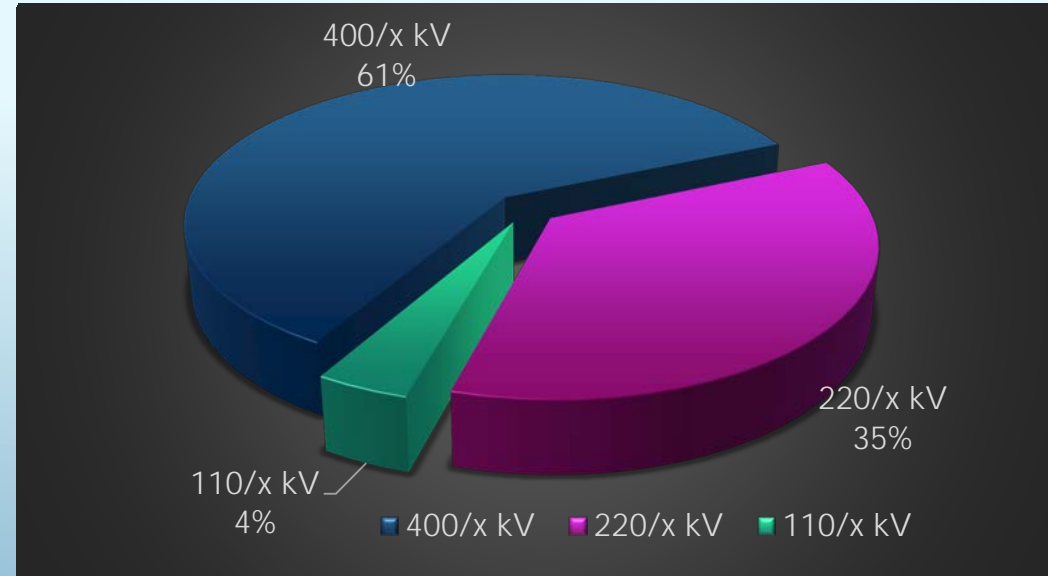
OHL

- 544 lines- 400kV, 220kV,110kV
- 10.964 km total length



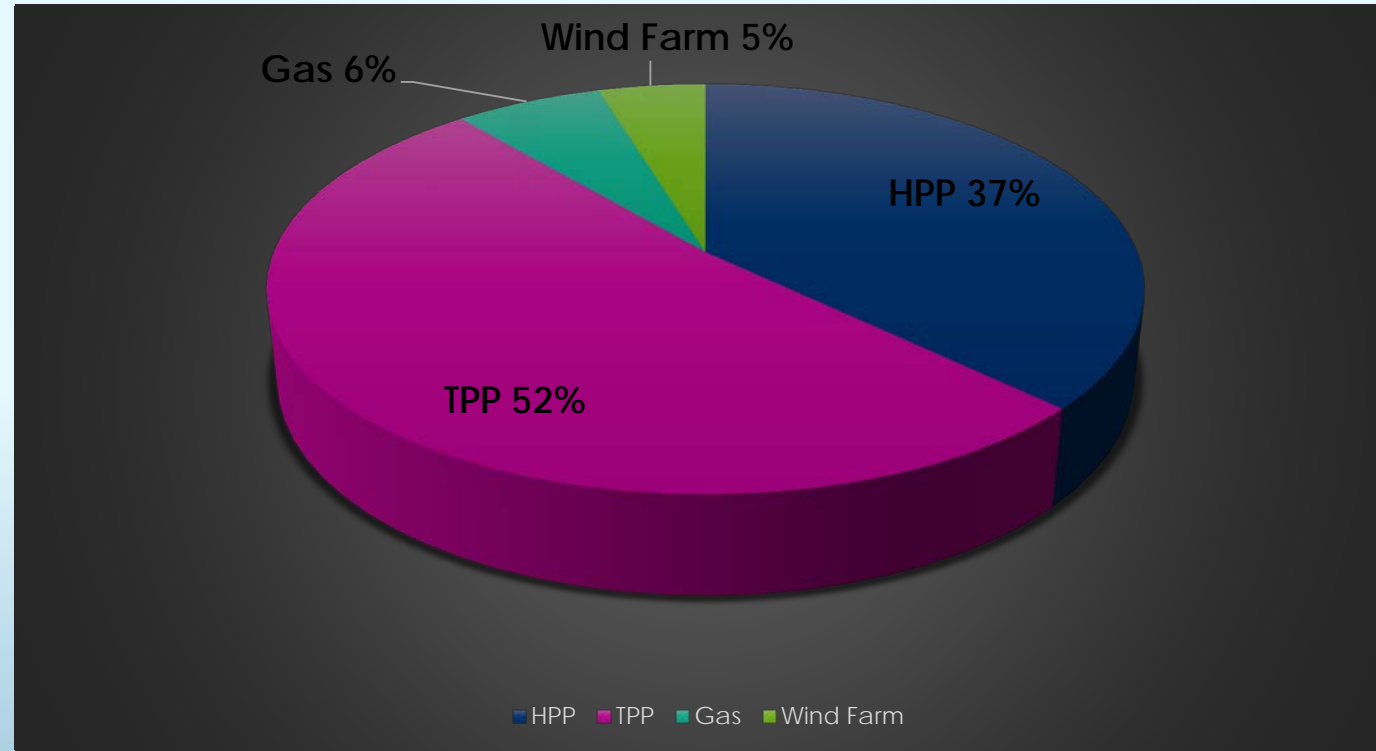
SUBSTATION

- 52 high voltage substations
- 85 transformers – total capacity 17.774 MVA



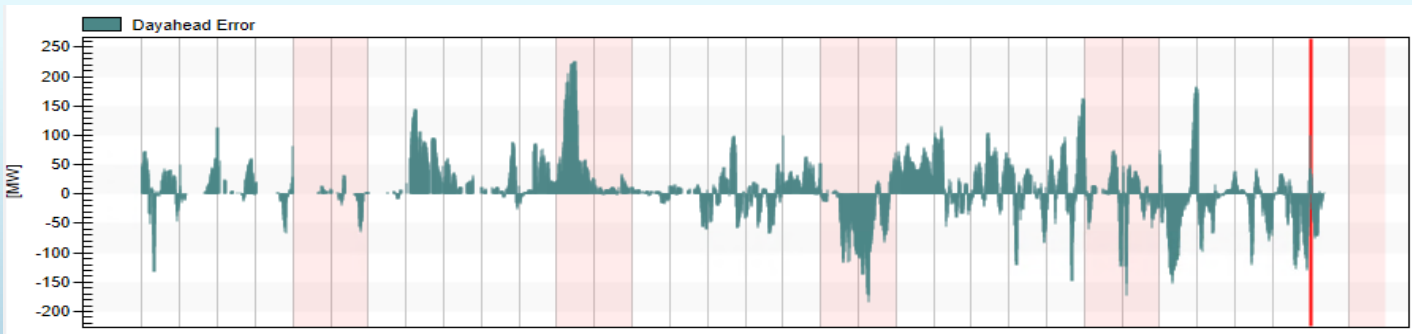
INSTALLED GENERATION CAPACITY

HPP	2954MW
TPP	4112 MW
Gas	514 MW
Sum	7580 MW
Wind Farm	373 MW
Total	7953 MW

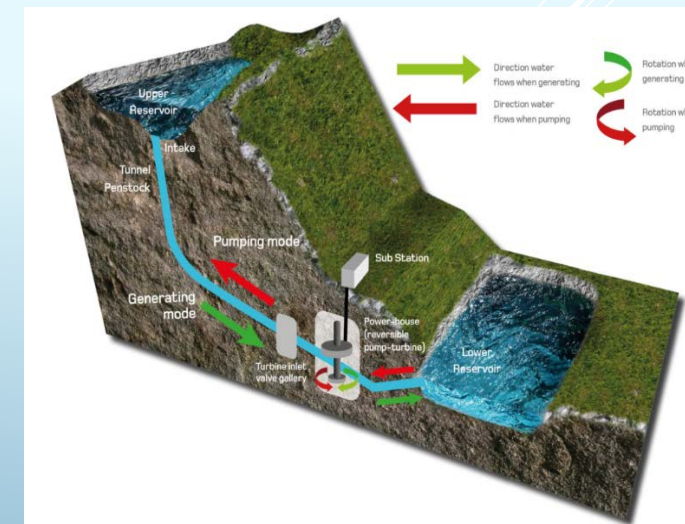


WIND PRODUCTION IN SERBIA

- ❑ Energy production from WPP in 2021 was more than 1000 GWh, approximately 3% of the total production. In the next year WPP Krivaca with 102 MW will be connected to the system
- ❑ After three years of wind power production in Serbia we can say that the green energy is precious but hard to predict. The reason for this is not very accurate forecast meteorological models for this region



- ❑ Large scale renewable integration could not be possible without the construction of new balancing capacities
- ❑ Serbia has adopted the new law regarding Renewable Energy Sources defining a new PROSUMER category. We expect exponential growth of PV at distribution level.



SITUATION OF TRANSMISSION NETWORK

- ❑ The Maintenance of transmission network for 2022 is completed
- ❑ The "Maintenance group in the SEE region" has agreed Maintenance plan for interconnection lines for 2023
- ❑ There is no planned disconnection of OHL in the EMS network by March of the next year
- ❑ The Defense plan has been updated and prepared in cooperation with DSOs and SGUs for the 2022/2023 season
- ❑ EMS has emergency towers for crisis situations, which can be important factors for the supply of electricity to customers. EMS has provided reserve unit for power transformers, which are in operation



SITUATION OF PRODUCTION

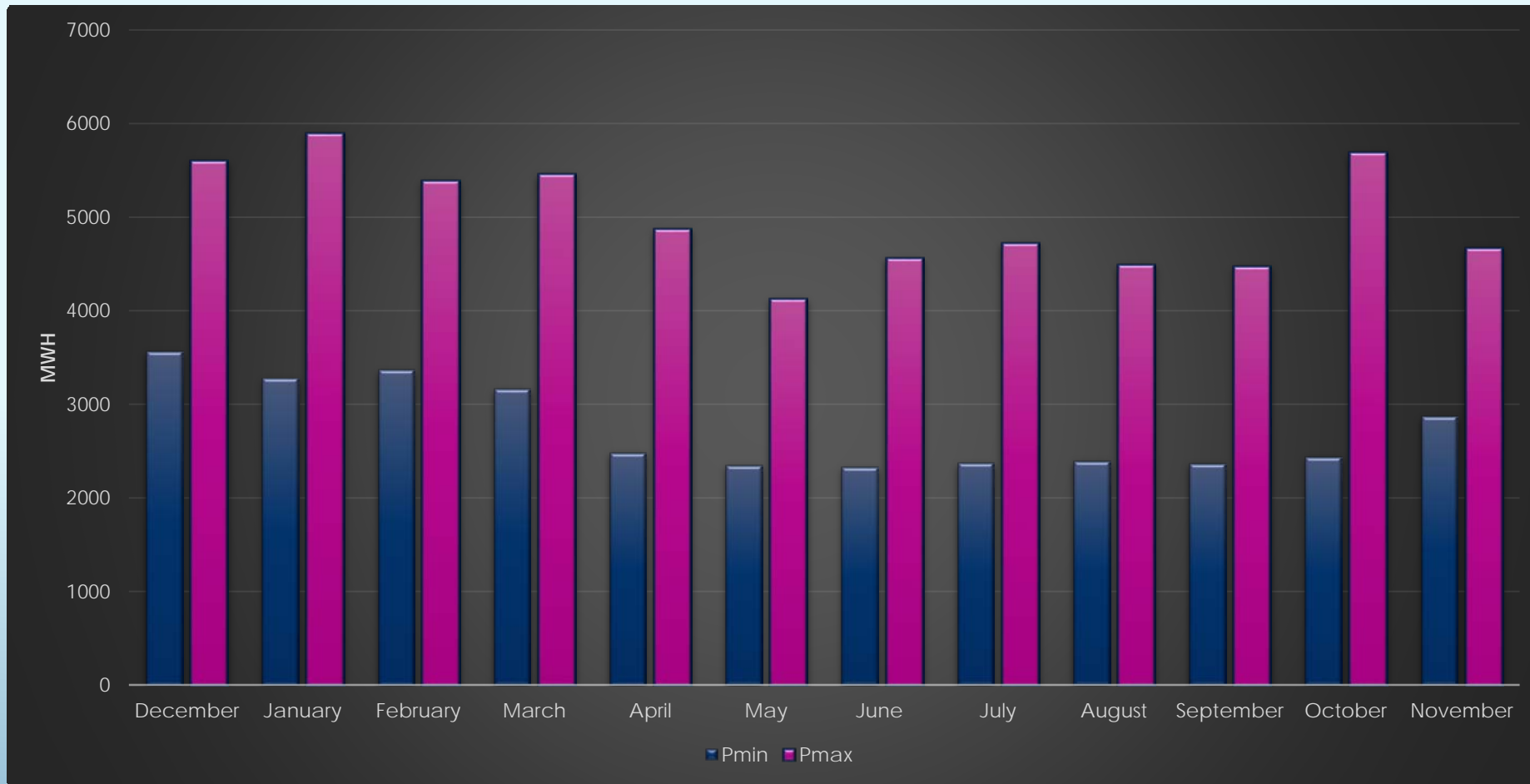
- ❑ The Maintenance of generating units was completed before the start of the winter season
- ❑ The total installed capacity of HPP Djerdap1 was increased for 120 MW. The refurbishment of the last generating unit (G3) in HPP Djerdap1 is under way, but the missing power of 200 MW does not affect the adequacy
- ❑ At the end of 2021, the gas-fired (CHP) power plant in Pancevo with 190 MW, has significantly contributed to system security
- ❑ At Q4 of 2023 we expect 350 MW TPP Kostolac B3 to be put into operation
- ❑ From the beginning of 2023, the communal waste-fed thermal power plant Vinca will be in operation with 35 MW of installed capacity



PREDICTION FOR WINTER 2022/2023

- ❑ **The detailed winter security analysis for winter 2022/2023 has been calculated at the level of Serbian transmission system. There is no significant overloads**
- ❑ **EMS regularly participates in Weekly Operational Call organized by ENTSO-E, in order to predict situation for the next week and identify possible risks from aspects of fuel supply, level of hydro, lack of system operating reserve and unplanned outages impacting the x-border exchange**
- ❑ **The Operational weekly calls are deemed to enable a fast reaction on possible issues in the electricity transmission systems, to set actions to be implemented by relevant TSOs and/or RCC**

Daily peak loads (max and min) in 2022



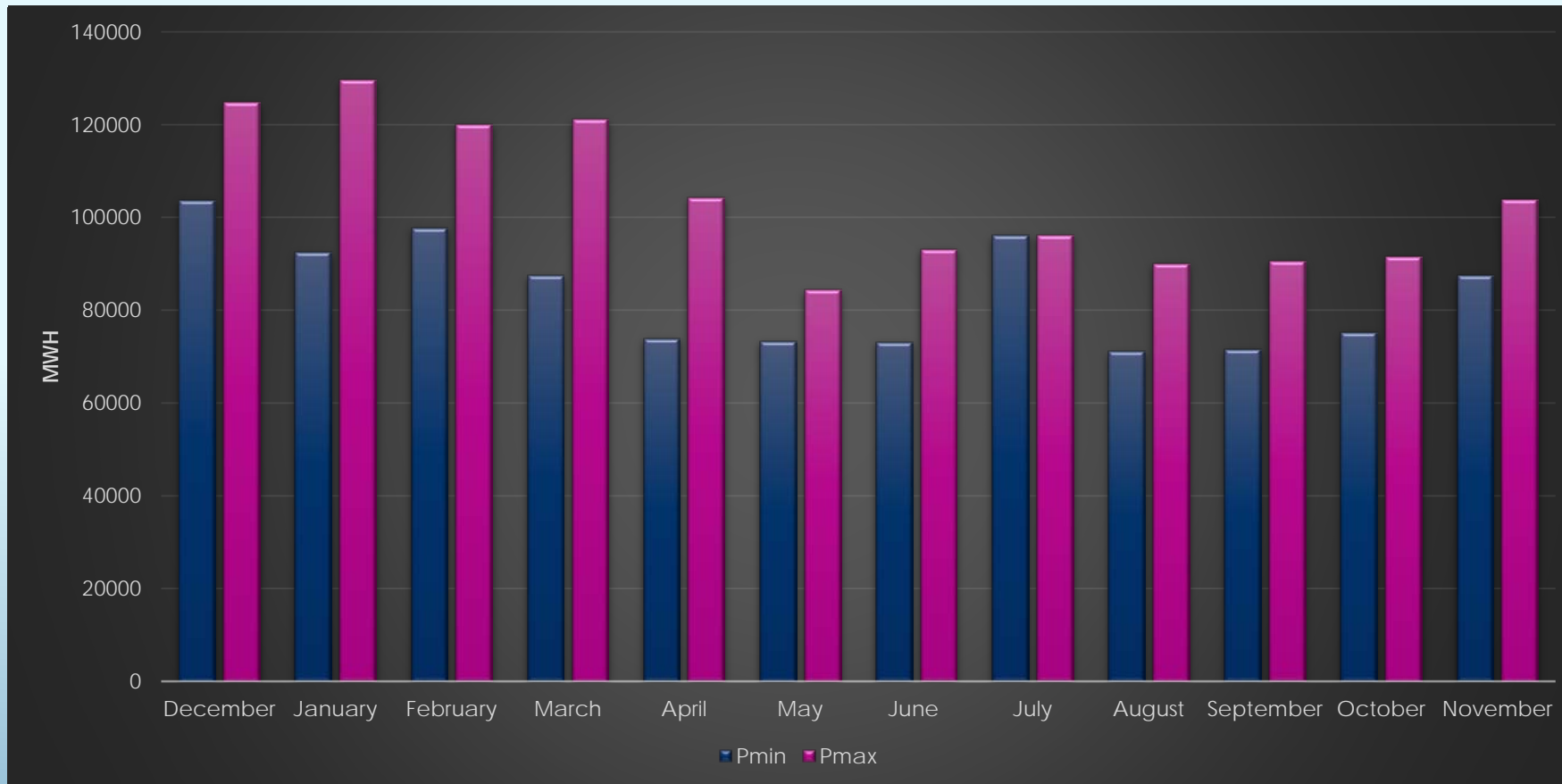
**-Max peak load:
25.01.2022. 5892 MW**

**-Min peak load:
12.06.2022. 2324 MW**

**-Max peak load ever:
10.01.2017 6325 MW**

	December	January	February	March	April	May	June	July	August	September	October	November
Pmin	3561	3275	3367	3161	2479	2347	2324	2373	2391	2365	2437	2868
Pmax	5594	5892	5387	5454	4871	4126	4557	4716	4485	4469	5689	4802

Daily max and min energy consumption in 2022



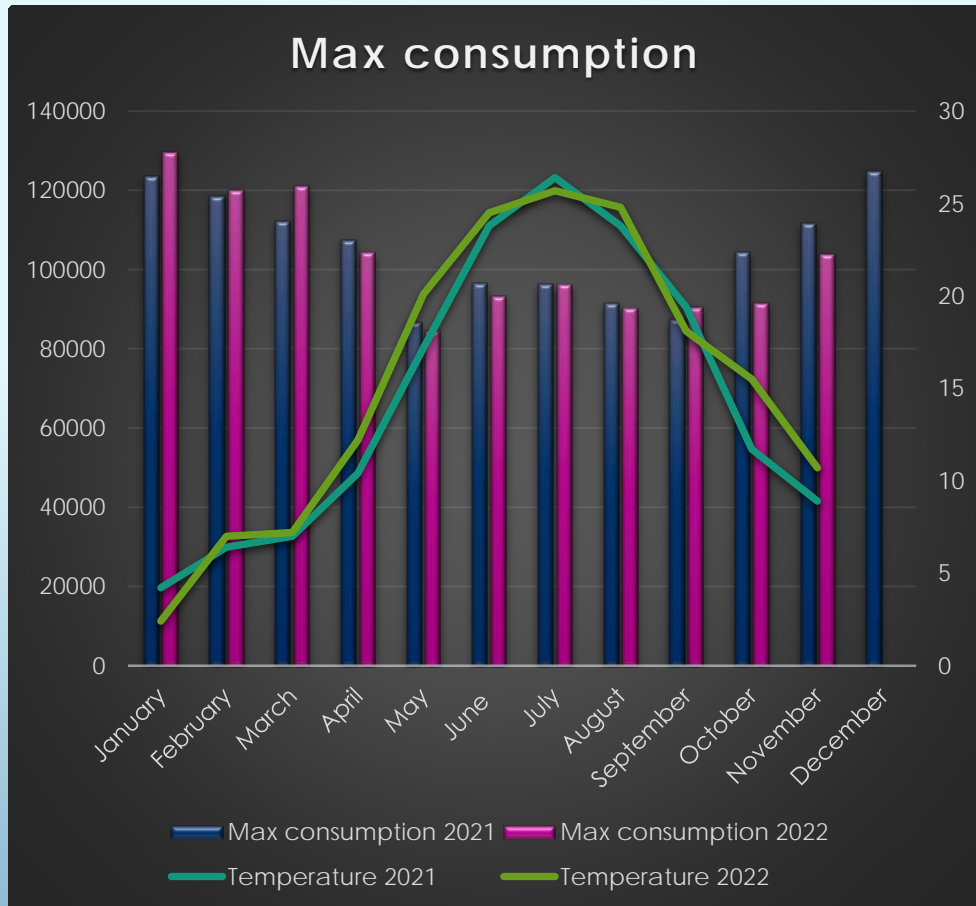
**-Max daily consumption:
25.01.2022. 129638MWh**

**-Min daily consumption:
21.08.2022. 71087MWh**

**-Daily consumption max
ever: 10.01.2017. 138570
MWh (cold winter)**

	December	January	February	March	April	May	June	July	August	September	October	November
Pmin	103704	92460	97790	87548	73952	73316	73115	96123	71087	71558	75240	87575
Pmax	124837	129638	120084	121154	104278	84400	93192	96123	90061	90623	91581	103886

Monthly max energy consumption in 2021/2022

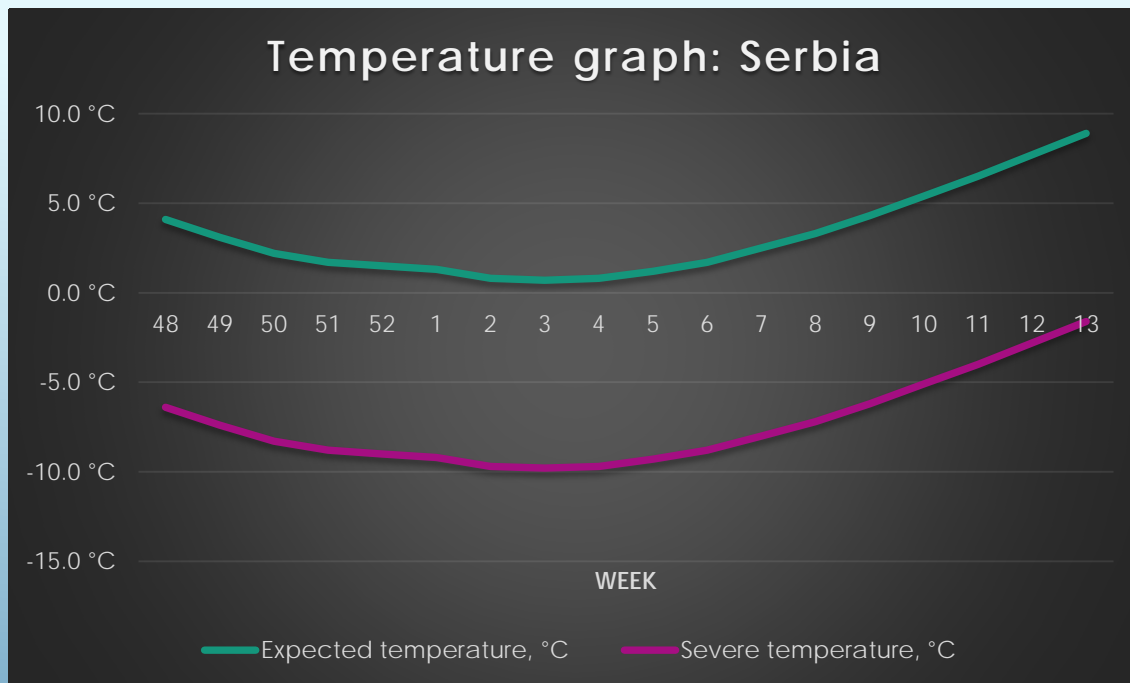


- ❑ Based on the data on consumption from the month of October in 2021 and 2022, there was reduction in consumption approximately 11%
- ❑ This situation was influenced by the average daily temperature, which was lower in October 2021 by an average of 3.8 degrees compared to 2022
- ❑ The lower consumption was also influenced by the Government measures to stimulate savings among electricity consumers

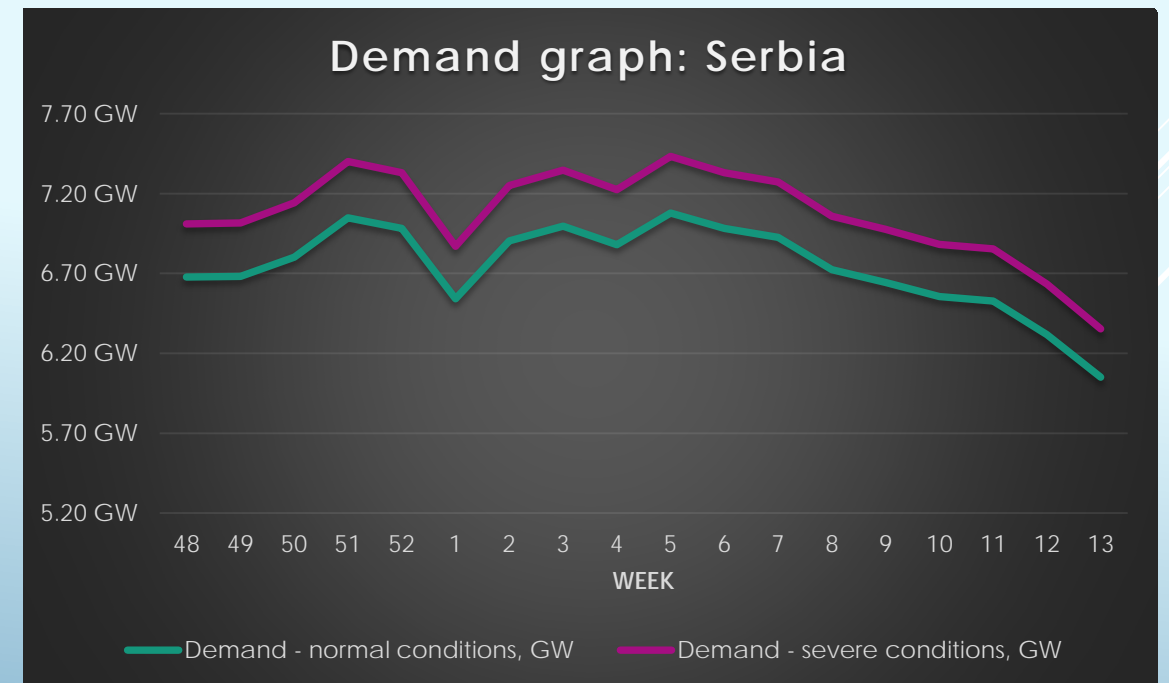
WINTER OUTLOOK 2022-23 DEMAND

Date	30-Nov-22	7-Dec-22	14-Dec-22	21-Dec-22	28-Dec-22	4-Jan-23	11-Jan-23	18-Jan-23	25-Jan-23	1-Feb-23	8-Feb-23	15-Feb-23	22-Feb-23	1-Mar-23	8-Mar-23	15-Mar-23	22-Mar-23	29-Mar-23
Week	48	49	50	51	52	1	2	3	4	5	6	7	8	9	10	11	12	13
Expected temperature, °C	4.1	3.1	2.2	1.7	1.5	1.3	0.8	0.7	0.8	1.2	1.7	2.5	3.3	4.3	5.4	6.5	7.7	8.9
Severe temperature, °C	-6.4	-7.4	-8.3	-8.8	-9.0	-9.2	-9.7	-9.8	-9.7	-9.3	-8.8	-8.0	-7.2	-6.2	-5.1	-4.0	-2.8	-1.6
Demand - normal conditions, GW	6.677	6.682	6.802	7.048	6.982	6.542	6.905	6.997	6.881	7.078	6.982	6.927	6.723	6.644	6.555	6.528	6.318	6.050
Demand - severe conditions, GW	7.011	7.016	7.142	7.400	7.331	6.869	7.250	7.347	7.225	7.432	7.331	7.273	7.059	6.976	6.883	6.854	6.634	6.353

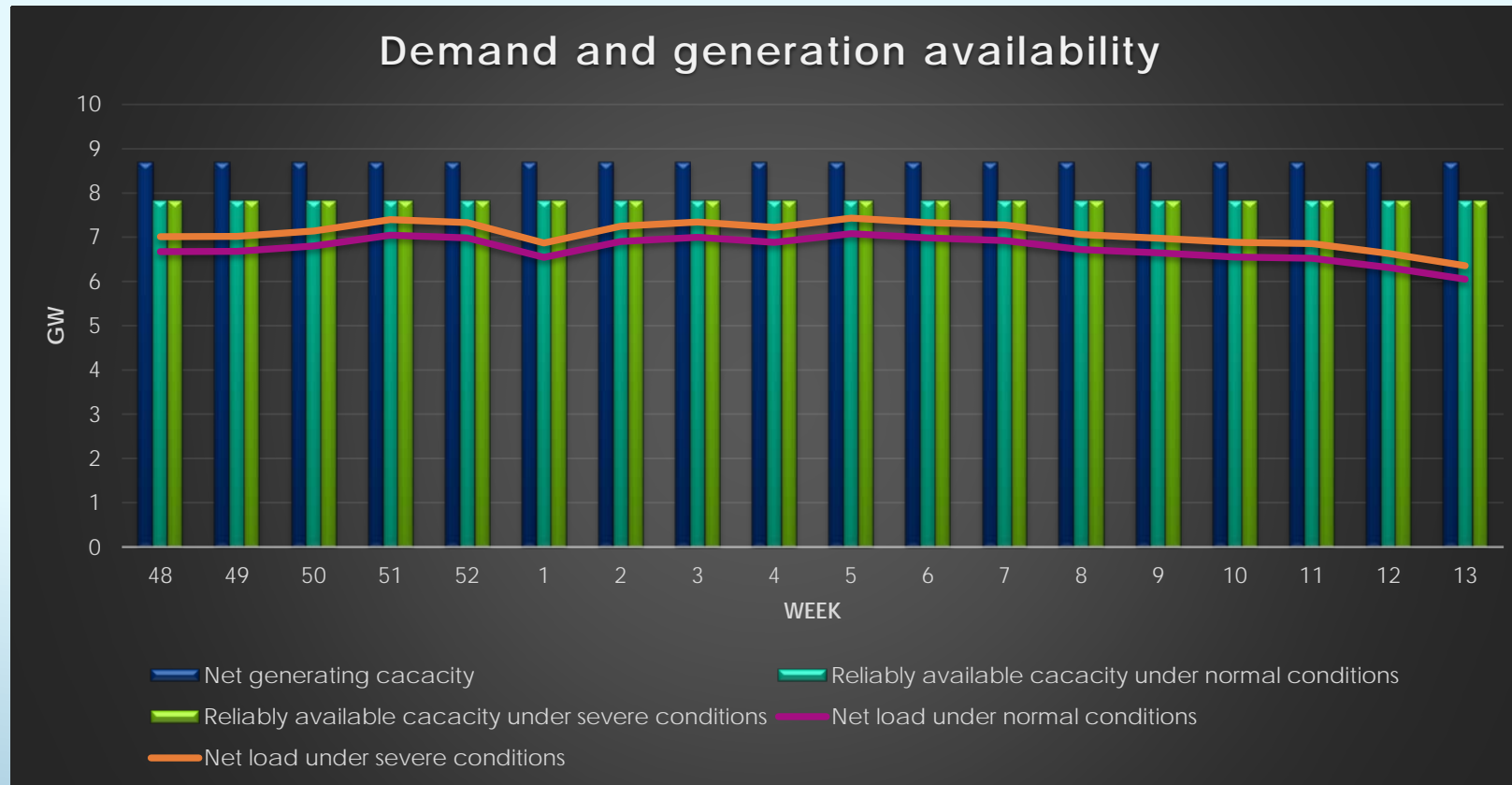
Temperature graph: Serbia



Demand graph: Serbia

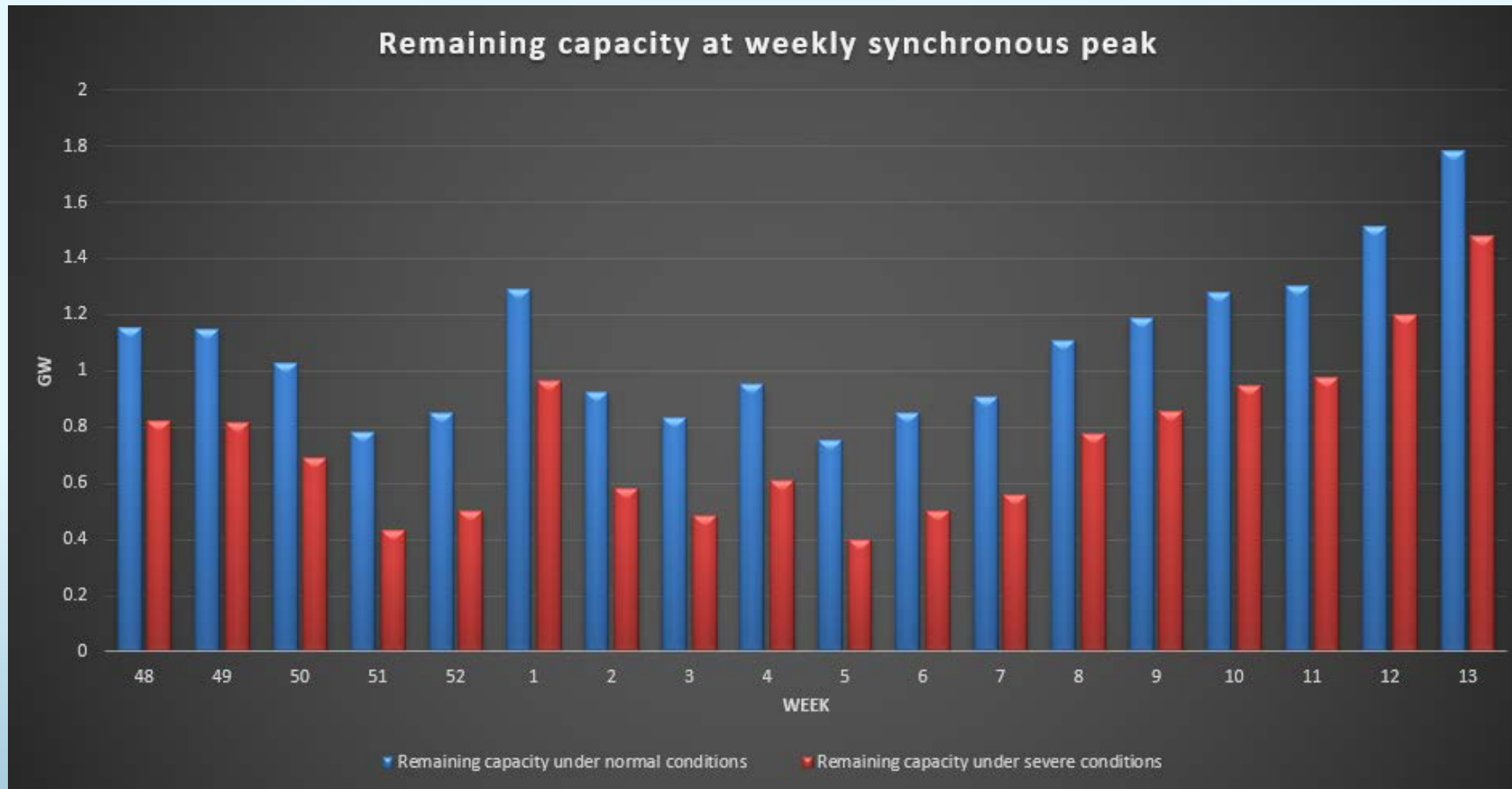


SYSTEM BALANCE – WINTER 2022-23



GW	21st dec 2022	18th jan 2023	15th Feb. 2023	15th mar 2023
Reliable available capacity	7.832	7.832	7.832	7.832
Net load under normal conditions	7.048	6.997	6.927	6.528
Net load under severe conditions	7.400	7.347	7.273	6.854

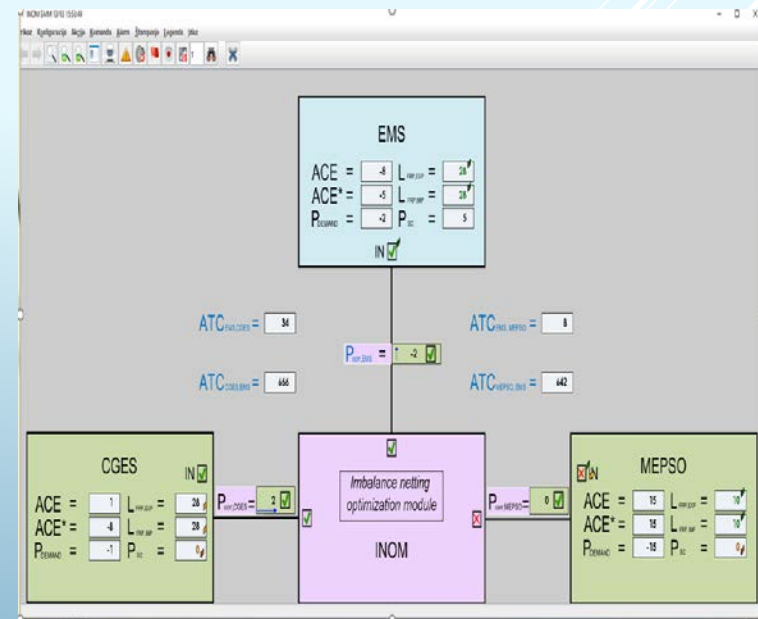
SYSTEM BALANCE – WINTER 2022-23



GW	21st Dec 2022	18th Jan 2023	15th feb 2023	15th mar 2023
Remaining capacity under normal conditions	0.784	0.835	0.905	1.304
Remaining capacity under severe conditions	0.432	0.485	0.559	0.978

ELECTRICITY MARKET

- ❑ Electricity market is stable
- ❑ Amount of Intraday capacity is currently enough to cover all requests for electricity exchange
- ❑ EMS is an operational member of the pan-European balancing IGCC platform starting from October 2022
- ❑ At the level of SMM block, Imbalance netting optimization module is in operation. The Grid Control Cooperation between SMM TSOs provides possibility to avoid the counter activation of secondary reserve aFRR
- ❑ EMS has developed procedures for exchange of cross-border balancing energy with TSOs from the region in case of a lack of energy in the Serbian system



WINTER OUTLOOK 2022-23 CONCLUSION

- ❑ For the upcoming winter, some problems could arise due to the possible energy crisis and unexpected weather conditions. Also, the price of energy can cause certain disturbance
- ❑ Only the major overhauls of the hydro generators are planned, but missing power does not significantly affect the adequacy
- ❑ In case of a gas shortage, it is estimated that it may increase consumption up to 300 MW and further increase over this margin in winter peak is not possible due to constraints in distribution system (experience from the gas crisis in 2009)

CONCLUSION

- ❑ **According to ENTSO-E seasonal outlook, the situation in the Serbian electricity system is satisfying. Mostly all production units are available, but due to uneven lignite coal quality, we can expect some electricity import**
- ❑ **Problems to cover demand might occur at extremely high peak loads under severe weather conditions, especially in January, and then energy imports will be required**
- ❑ **We are expecting exports under normal weather conditions during spring**

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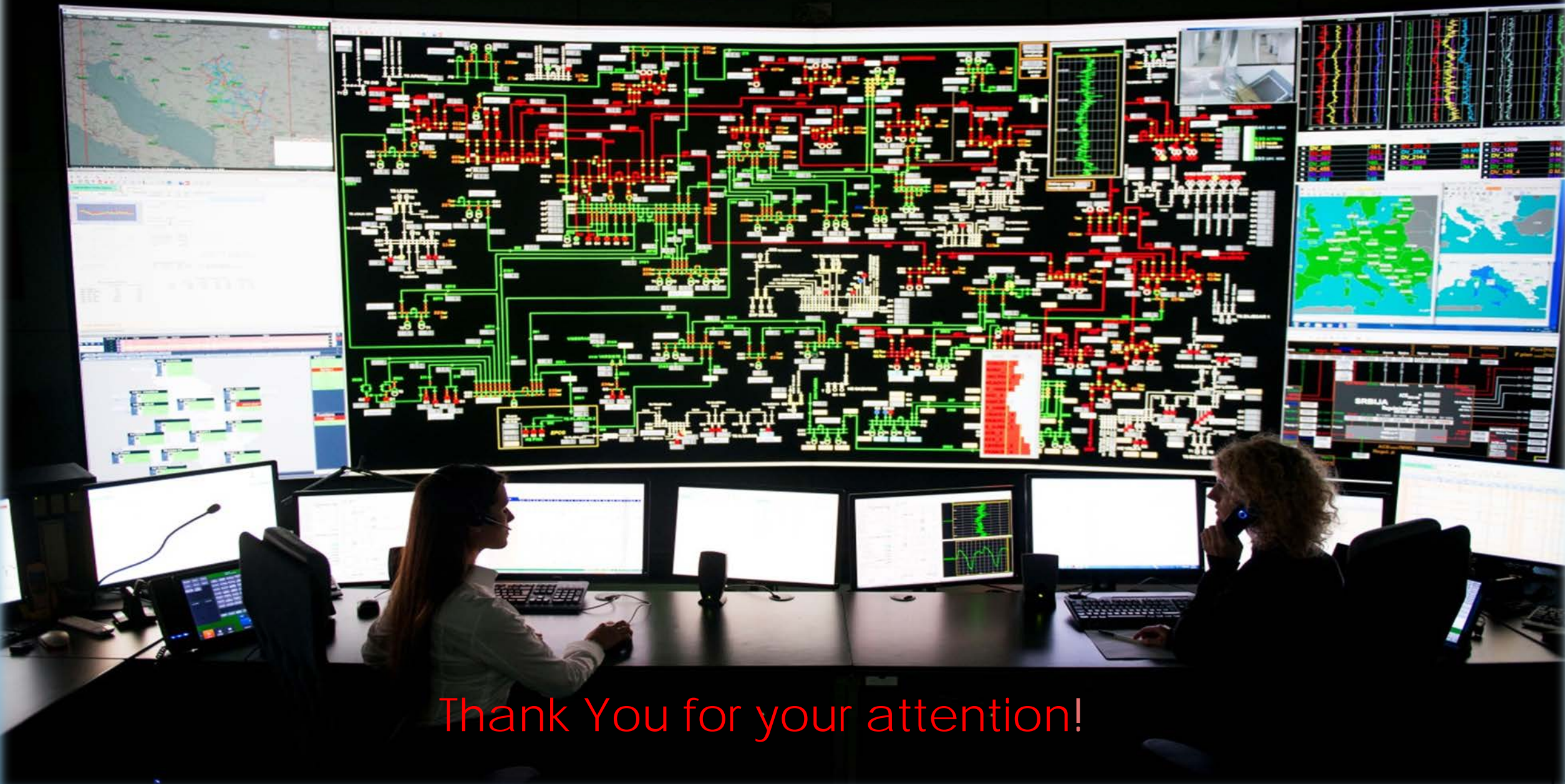
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Thank You for your attention!