

The distribution networks of the Republic of Bulgaria - Electricity

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Newark, New Jersey – Washington, DC, U.S.A.

Background

Development of the local electrification in Bulgaria:

Sofia

- On 01.04.1899 the building of the electricity network started and by 1904 a supply ring was built – aerial power line 7 kV, 13 km long with 16 transformer points 7,0/0,15 kV;
- A second cable ring 5 km long with 3 kV voltage and 5 transformer points of 3,0/0,15 kV was built in the central part of the town. The network in the central part of the city is also a cable one for a voltage of 150 V.

Gabrovo

- 1911 – power line 6 kV with 3 transformer points 6,0/0,22/0,127 kV.

Kazanlak

- 1913 – power line 6 kV with transformer points 6,0/0,21/0,12 kV.

Lom

- 1912 – 2 diesel aggregates Sulzer, voltage 440/220 V + 2 accumulator batteries which were able to charge 50 up to 100 kW per 3-7,5 hours. The system worked till 1926 and supplied a town of 1500 inhabitants.

Varna

- 1914 – a diesel power station was built, cable network 5 kV with a length of 8,7 km, 14 transformer point, three-phase aerial network 210/120 V with a total length of 48 km.

Rousse

- 1917 – 3 diesel aggregates Sulzer, cable network 3 km – ring supplying 9 transformer points 3,0/0,21/0,12 V. Network aerial, three-phase 210/120 V.

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Transition from local to regional electrification (1919-1947)

The idea about the creation of general electrification plans of Bulgaria emerges after the end of WWI

The general line of development of electrification follows the following chronology:

- 1920 – The Act on the Water Syndicates and a general state water program;
- 1925 – Bill on the systematic electrification of Bulgaria;
- 1929 – 1933 – Committee on the drafting of a general electrification plan;
- 1940 – Competition for a general electrification project;
- 1941 – “General Electrification Plan of the Kingdom of Bulgaria” developed and approved by the Prime Minister B. Filov;
- 1946 – 1947 – 2 annual people’s plan on electrification.

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In the period 1919 – 1940 9 electrification regions in Bulgaria were formed and developed:

- Sofia electrification region:
 - 1926 – Electricity association for Sofia and Bulgaria;
 - 1926 – Granitoid shareholding company;
 - 1929 – Pernik state mines;
 - 1937 – Macedonia union of the water syndicates.
- 1919 – Plovdiv electrification region;
- 1930 – 1940 – Stara Zagora electrification region;
- 1923 – Bourgas electrification region;
- 1923 – Varna electrification region, including the Rousse region;
- 1923 – Gorna Oryahovitsa electrification region;
- 1936 – Shumen electrification region;
- 1940 – Pleven electrification region;
- 1935 – Mezdra electrification region.

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Centralised management of the electrification of Bulgaria

- 1932 – the Electrification Directorate was set up;
- 1940 – Electrification Directorate for Northern Bulgaria;
- 1941 – Implementing the approved General Electrification Plan Bulgaria was split into 5 electrification regions: Danube, Maritza, Central, Macedonian and Belomorska;
- 1946 – the Ministry of Electrification was set up;
- 1948 – 1970 – A period of construction of a unified power system and the overall electrification of the country;
- 03.1948 – The Act on Electricity was adopted;
- 04.1948 – A State Economic Union “Energoobedinenie” for the production, transfer and distribution of power was set up. The union included: 12 electrification regions including 17 electricity producing branches with 15 thermal power stations, 63 hydropower stations, 23 diesel stations and 49 electricity supply regions;
- 1970 – The electrification of the whole country was completed (1948 – 1970);

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Concept on the development of the transfer and distribution networks in Bulgaria

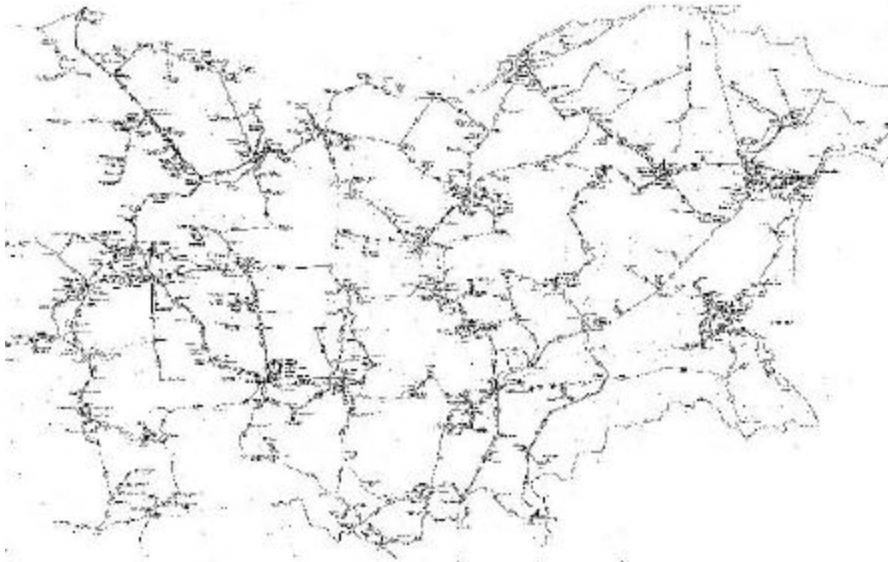
- During the initial development of the electrification the following voltage is established :
 - for transfer 5, 6, 7, 15, 20, 35 and 60 kV;
 - for distribution 150 V, 210/120 V and 380/220V;
- In 1958 the 110 kV ring is closed and there started the setting up of a 220 kV system;
- In the 1960s the following principles of development of the power networks are introduced:
 - 1) Unification of the low voltage at 380/220 V and removal of the 150 V voltage in Sofia and 210/120 V in Kazanlak, Rousse and Varna;

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Chart of the 110 kV network



Chronology of the reorganisations in the electricity supply system of Bulgaria

1919 – 1940 – 9 electrification regions;

1941 – 5 electrification regions;

1948 – 12 electrification regions;

1953 – A central dispatcher system was set up;

1955 – An overall reorganization was carried out and an Energy Division was set up under the Ministry of Electrification with 3 regional energy sections :

- “Sofenergo” – Sofia;
- “Jugenergo” – Plovdiv;
- “Severenergo” – Gorna Oryahovitsa.

1958 – New reorganization – the 3 sections were closed down and 13 district electricity supply utilities were set up (the former electrification regions);

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- 1976 – the 13 electricity supply utilities were merged into 7 ;
 12.1991 – NEC was set up – initially the 7 utilities remained in it;
 01.1992 – Within NEC 28 branch utilities called “Electrosnabdyavane” were set up;
 01.1997 – NEC adopts the structure of 15 utilities;
 2000 – After the restructuring of NEC 7 state electricity distribution associations became independent and received licenses from SERC;
 09.2000 – The first private electricity distribution association was set up “Electrorazpredelenie Zlatni Pyasatsi”.

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Structural reforms in the electrification and energy sector in the period 1946 – 2001

1. Reorganization of MEWUT into a Ministry of Electrification and Melioration (MEM) and a Ministry of the Mines and the Underground Treasures;
2. 1948 – Setting up of the State Union “Energoobedinenie” for the production, transmission and distribution of electricity;
3. 1951 – ÌÄÌ was transformed into a Ministry of Electrification (ÌÄ);
4. 1957 – ÌÄ was transformed into a Ministry of Electrification and Water Management (ÌÄWM);
5. 1959 – MEWM was closed down and the energy section were transferred to the Commission on Industry and Technical progress;
6. 1962 – a Commission on Energy and Fuel (CEF) was set up under the Council of Ministers but not with ministry status;
7. 1966 – Ministry of Energy and Fuel was set up (ÌÄF);
8. 1971 – MEF was closed and its functions were assumed by the Ministry of Heavy Industry;

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9. 06.1973 – the Ministry of the Chemical Industry and the Energy was set up;
10. 10.1973 – the Ministry of Energy was set up (ÌÅ);
11. 1984 – ÌÅ merges with the Ministry of Metallurgy and Mineral Resources and became a Ministry of Energy Resources and Raw Materials (ÌÅRRM);
12. 1985 – A Ministry of Energy was set up (ÌÅ);
13. 1986 – It was closed and became EU “Energetica”;
14. 1987 – EU “Energetica” was closed and it became Energetica Association;
15. 1989 – Energetica Association was closed and the Commission on Energy was established;
16. 1996 – The Ministry of Energy and Energy Resources was set up;
17. 07.1999 – State Agency on Energy and Energy Resources;
18. 12.2001 – A Ministry of Energy and Energy Resources.

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POWER DISTRIBUTION UTILITIES (PDU)



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Generalised data on the power distribution utilities (PDU)

PDU	square km	Subscriber N:		Consumer N: with annual electricity consumption			
		household	industrial	1-9 GWh	9-20 GWh	20-40 GWh	> 40 GWh
G.Oryahovitsa	15 623	499 512	38 707	149	7	5	0
Stara Zagora	21 000	596 562	85 569	126	10	6	0
Plovdiv	20 000	400 941	151 947	157	12	4	3
Sofia region	19 093	529 890	58 960	130	4	0	0
Sofia city	1 311	584 784	71 560	177	14	2	3
Varna	14 360	520 031	71 716	141	3	2	2
Pleven	19 613	579 473	60 339	123	6	3	1
Zlatni Pyasatsi	30	5	460	5	0	0	0

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Upcoming privatisation and restructuring

1. Pre-privatization preparation – IÄÄR with the cooperation of consultants from BNP PARIBAS has undertaken a comprehensive analysis of the status quo;
2. Forecast – creation of 3 electricity distribution utilities:
 - Sofia (Sofia city, Sofia region and Pleven);
 - Gorna Oryahovitsa (Varna and Gorna Oryahovitsa);
 - Plovdiv (Plovdiv and Stara Zagora).
3. Preparation for liberalisation of the electricity market;
 - 1) Adoption of EEEA (modification of the existing market model);
 - 2) Drafting of secondary legislation ;
 - Technical rules for the electricity system (GRID code);
 - Commercial rules for the organization and functioning of the Electricity Market.
 - 3) Licensing of the new participants in the liberalized electricity market (public provider, public supplier and trader);
 - 4) Regulation on the quality of the electricity and the quality of the service;
 - 5) Regulation on the safety of the supplies.

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Thank you for your attention

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