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USEA and USAID

Utility Partnership Program

Annual Planning and Review Meeting

**NEW DIRECTIONS AND CHALLENGES
FACED BY THE POWER SECTOR OF
BULGARIA**

**Presentation of
Natsionalna Elektricheska
Kompania**

Warsaw, September 1995

DEAR FRIENDS,

On behalf of the Bulgarian electrical utility Natsionalna Elektricheska Kompania, I would like, in the first place, to express my sincere gratitude to the organizers of this event from the US Agency for International Development, USEA, as well as our hosts, the Polish electrical utility PPGC, for the opportunity I was granted to participate in this perfectly arranged by them program of this forum.

LADIES AND GENTLEMEN,

The operation of Natsionalna Elektricheska Kompania, both during the past 1994 and now, is characterized by a relatively strong dynamism of changes caused by the unstable macro-economic conditions prevailing in the country, and by the beginning slow revival of industrial production.

- ⇒ In 1994 the gross electricity demand in Bulgaria reached 38,104 billion kWh. It is worth noting that since 1988, that was the first year when certain, even though minor, growth was observed after a long period of recession. Current data from the first 6 months of 1995 evidence a further development of that trend - compared to the same period of the previous year electricity demand has grown by 10,9 %. The expected gross demand for 1995 is about 41 billion kWh which is equivalent to 7,6% growth.

The pattern of electricity demand shows that, while preserving the general proportion, the relative share of the industrial and commercial sectors has slightly increased (by about 1%), while the share of residential demand has respectively decreased.

- ⇒ As you probably know, NEK is not a monopolist in electricity generation, although it owns 86,8% out of the 12 574 MW installed capacities in Bulgaria. The autumn/winter season load maximum of 7040 MW was covered in December 1994. Further improvement of power generation structure is observed: the relative share of the Kozloduy Nuclear Power Plant for the first half of this year has increased by 23,9% compared to the same period of last year, and that of the fossil power plants burning indigenous coal - by 15,53%. The share of plants burning imported coal has respectively decreased as well as that of hydro-power plants due to limited water resources and problems with the supply of imported coal.
- ⇒ Improvement of dependability indices and, more specifically, the reliability of NEK's generating capacities can be pointed out. That can be concluded from the decrease of failure rate by 6,6 %, of the

restoration mean time by 33 %, and of conventionally lost generation by 8,7%. The number of failure caused by human error has decreased by 47 %. As for the transmission and distribution network, the failure rate has also decreased by 21 % in spite of the large number of wire thefts, the remedies for which amount to more than 8 % of the costs of electricity supply branches.

- ⇒ The macro-economic environment in which NEK had and still has to operate, remains extremely unfavourable. The inflation rate recorded last year was 122 %; Bulgarian currency was devaluated almost twice with respect to the US dollar, while prices of imported fuels were calculated at international market prices in hard currency; the price of local coal increased by 30 %; the sum of unsettled electricity bills reached 17,5 % of the annual revenues, while electricity price remained one of the lowest - this year it was between 1.5 and 1,95 US cents/kWh as on 1.06.1995 and does not even cover the generation costs. Since the 1st of September 1995, we have a new price, equivalent to 2,7 to 3 US cents /kWh on the average which, however, will not solve the company's financial problems.

Against that background, the 45 % increase of corporate costs can be rated as acceptable. The largest relative share goes for fuels - 34 %; however, a matter of special concern for the utility is the trend towards growth of financial costs reaching 175%, due to shortage of its own revolving funds and thence, the need to draw short- and long-term loans from commercial banks.

All facts mentioned above give an idea, although a most general one, of NEK's condition; but it would not be full if some other facts were not mentioned.

The international conditions for operation of the company are also quite unfavourable. With 7000 MW load maximum and the existence of 1000 MW generating capacities, our parallel operation with other power systems is of key importance for the stability of our system and for frequency control. After the dissolution of the „MIR“ ex-interconnected system, Bulgaria was left in the possibly most difficult situation.

On May 12th 1995, the first stage of the Pumped-storage Underground Hydro-power Station „Chaira“ - a facility unique not only for Bulgaria, was commissioned. It has 700 m difference between the heights of its two compensating basins which is overcome in a single pumping operation. The total installed capacity of this stage is 432 mW in the generating mode. That will increase the power system control and load following capabilities. During the next two years, the second stage of another 432 MW will be completed.

Radical corporate actions to improve the management of NEK have been undertaken. Adoption of a decentralized method of management assumed the form of allowing wide-scope powers to branch and enterprise managers. They have the right to perform practically all activities related to the normal functioning of the company's units, by imposing certain limitations with respect to fixed assets, long-term investment loans, as well as conclusion of direct international commercial contracts.

At some electricity supply branches of NEK (more particularly, in Sofia), significant steps towards improving customer service were made by means of new computer-aided billing techniques.

With USAID assistance, a least-cost development plan was developed, submitted to the World Bank, EBRD and EIB, and approved by them. Since 1992, development of a new legal framework for the power sector has started on the basis of the following main principles:

- ⇒ compliance to the market economy principles introduced into the country through the new Constitution and the subsequent Trade Act and Foreign Business and Foreign Investment Protection Act, as well as the principle of the European Energy Charter and the relevant Acts;
- ⇒ energy efficiency improvement;
- ⇒ supply security;
- ⇒ to assign fuel price and electricity tariff monitoring to an independent regulatory body endowed with enhanced powers and functions;
- ⇒ elimination of the natural monopoly through provision of equal footing for the independent power producers (IPP), other non-NEK power generation, transmission and distribution facilities, and equal footing for the various forms of ownership in this sector of industry;
- ⇒ stricter requirements towards companies performing power site construction and repair with licensing of their activities;
- ⇒ clear definition of Governmental body powers : development of long-term development plans, design and monitoring of the national energy balance.

The principles listed above were comprehensively discussed by a wide range of professionals from various organizations and defined in the relevant provisions of the Energy Act which is to be passed by the National Assembly, as well as in a separate Energy Efficiency Act which is a national priority.

The energy development strategy covering the period till the year 2020 was completed. Its approval by the Government of Bulgaria is expected by the end of this month.

NEK's short-term priorities can be ranked as follows:

- ⇒ initiation of a rehabilitation programme for improving the reliability of generating capacities, and for ensuring the reliable and high-quality customer services during the years to follow;
- ⇒ implementation of a program for reduction of power transmission, transformation and distribution losses;
- ⇒ improving customer services by minimizing bureaucracy, providing payment facilities, good information support, quick and high-quality failure removal;
- ⇒ improving corporate finance management through setting up a revenue and cost management information system (MIS), reducing debt growth to the minimum, long-term contracting of fuel supplies;
- ⇒ improving the pricing system with so as to bring it into harmony with the actual economic conditions in the country;
- ⇒ development of telecommunications meeting the requirements of operating management, and of the corporate management and control information systems.

LADIES AND GENTLEMEN,

As you may have concluded from the above-said, Natsionalna Elektricheska Kompania of Bulgaria faces the challenges of re-organizing its operations in a time of economic crisis and undefined relations among separate economic entities. We highly appreciate the assistance and support extended to us by our United States partners and friends: USAID, USEA, DOE, and, to be sure, Central Maine Power Company. Joint studies, equipment and technical facility supplies, experience exchange, study tours of Bulgarian professionals, are only a small part of our joint activity list from which something very important shall not be omitted: friendly relations and mutual confidence.

Thank you for the attention!

GROSS DEMAND

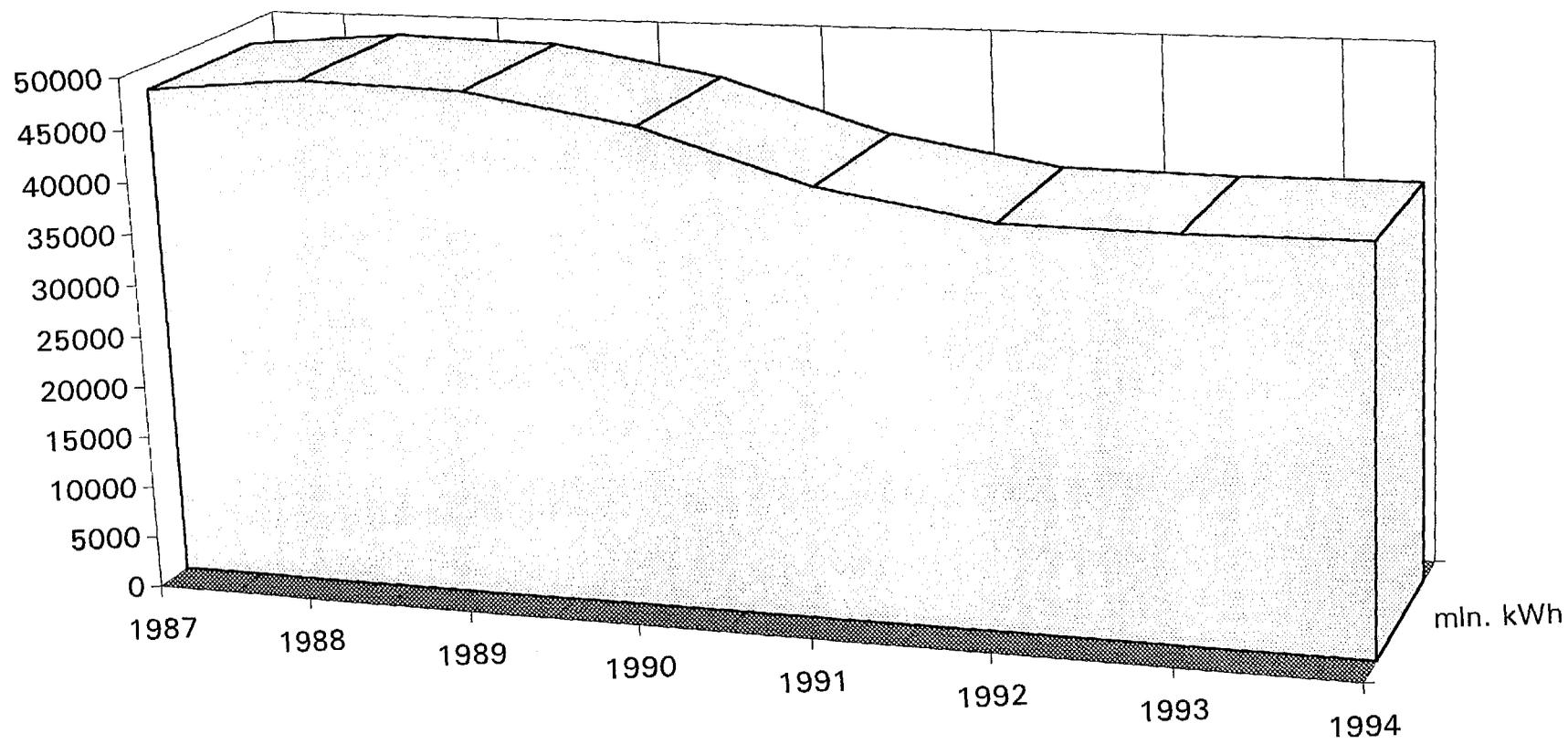


Figure 1

GROSS DEMAND

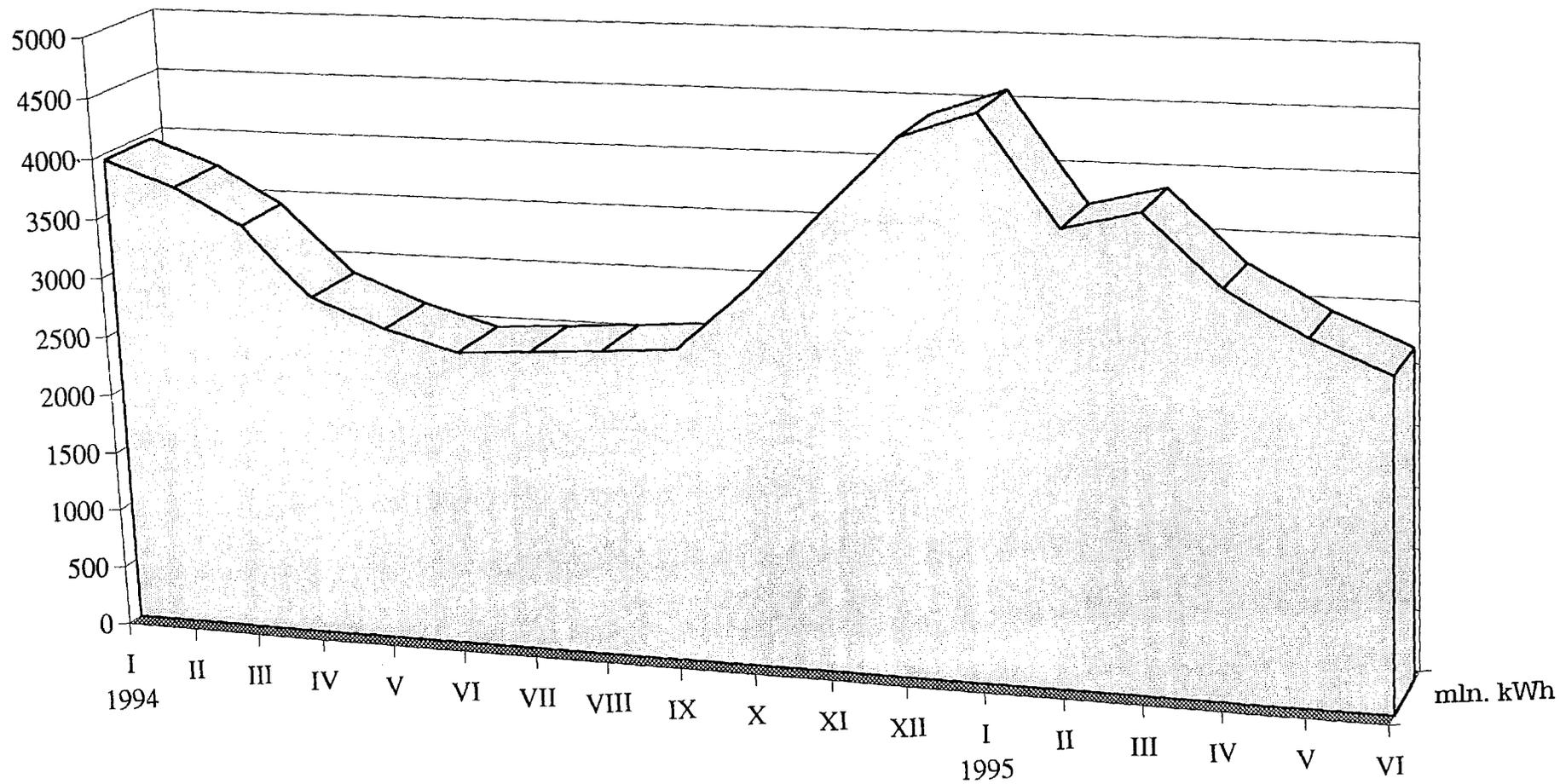


Figure 2

ELECTRICITY CONSUMPTION
(mln. kWh)

Industry Public Sector Residential Street Lighting

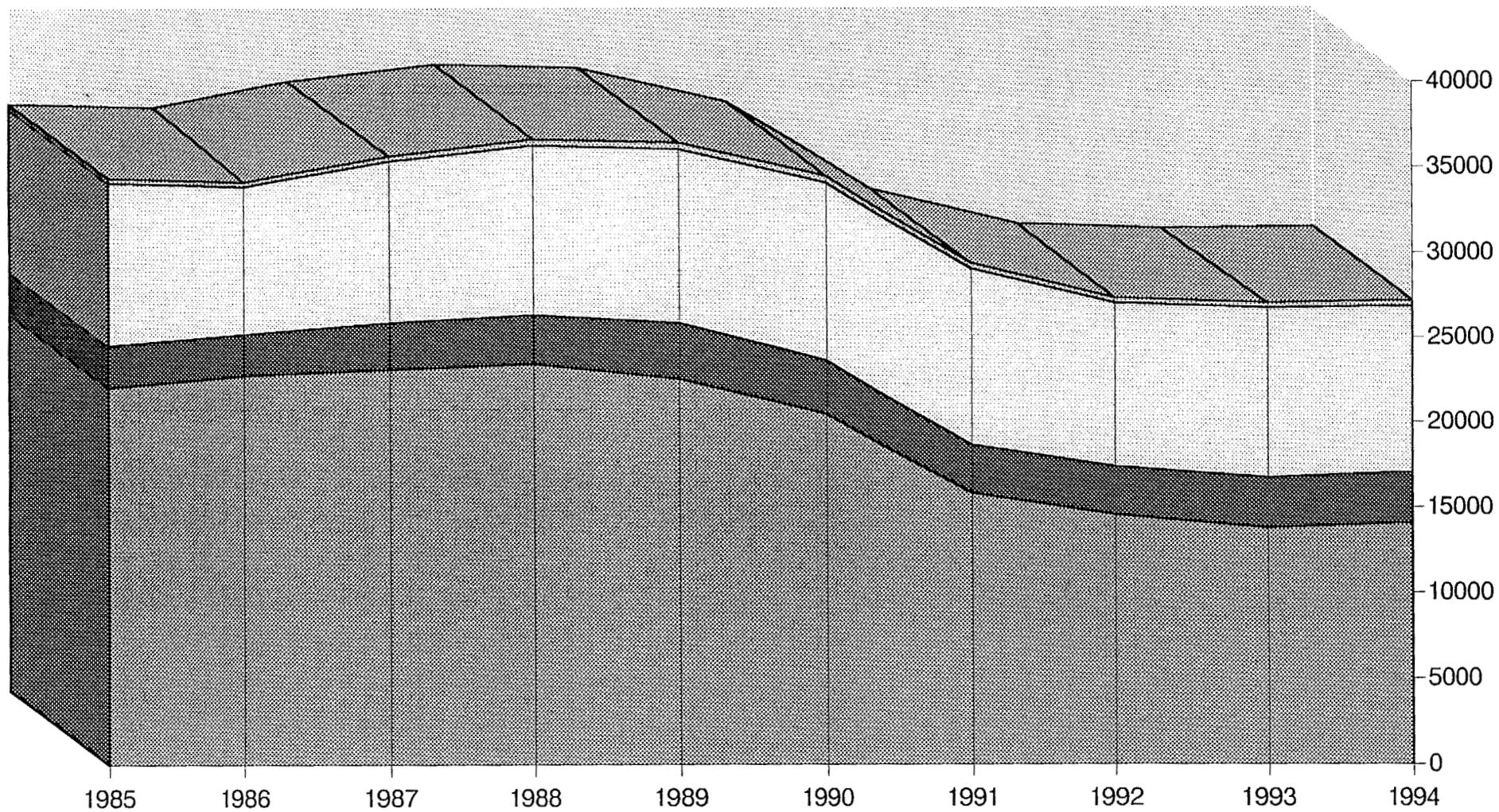
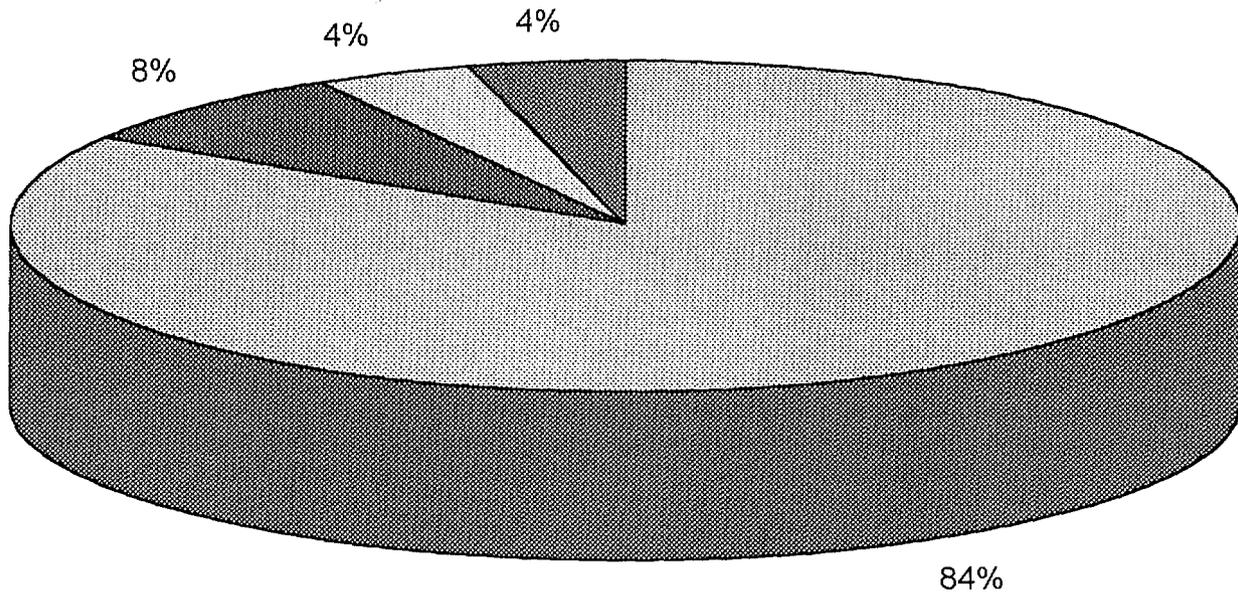


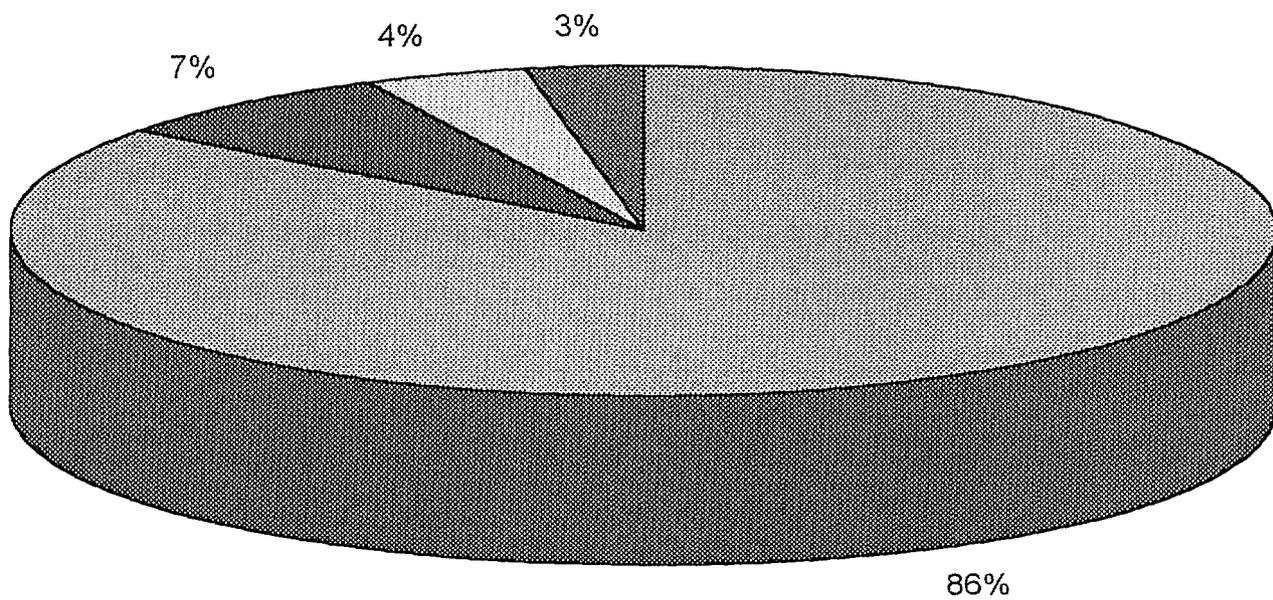
Figure 3

Power Generation Pattern, 1993



■ NEK ■ Industrial Power Plants ■ Non-NEK Power Plant ■ Imports

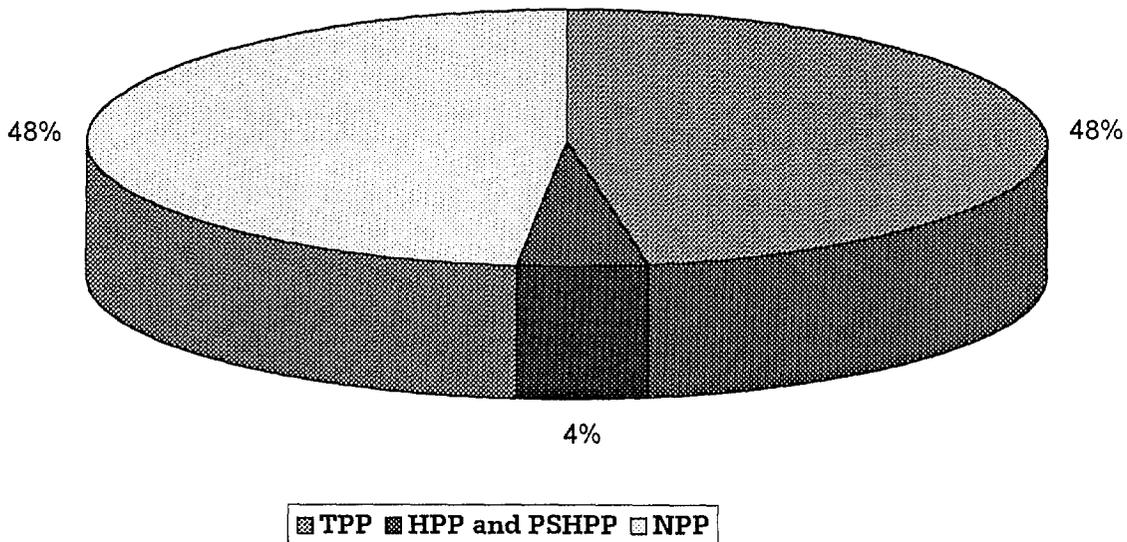
Power Generation Pattern, 1994



■ NEK ■ Industrial Power Plants ■ Non-NEK Power Plants ■ Imports

Figure 4

NEK Power Generation Pattern, first half of 1994



NEK Power Generation Pattern, first half of 1995

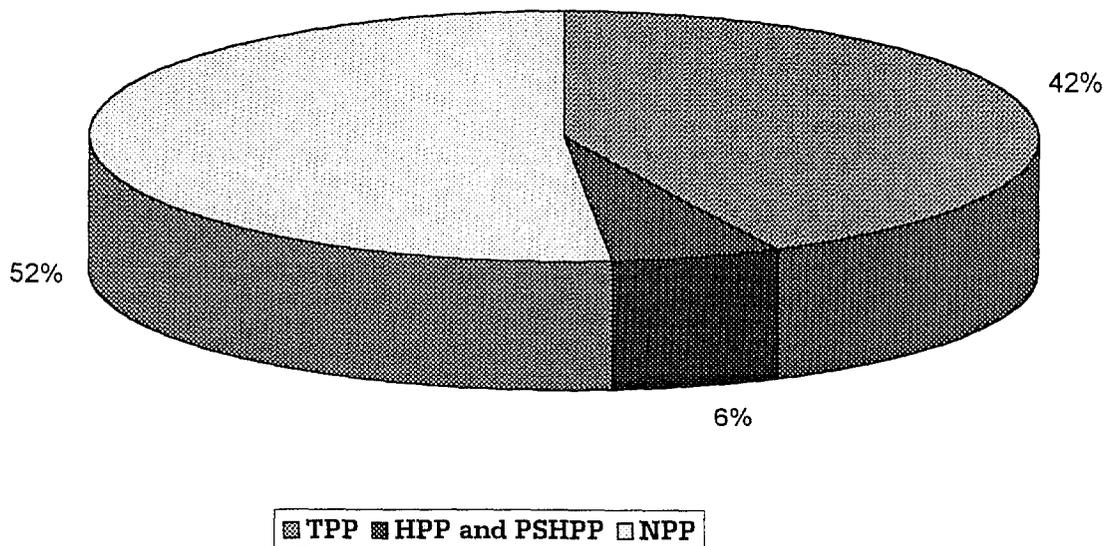


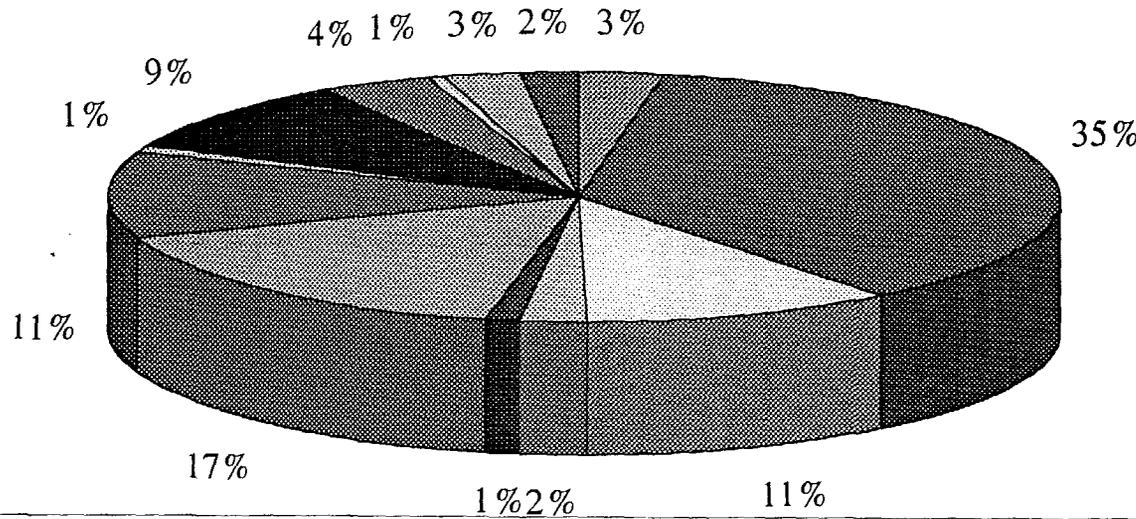
Figure 5

**MACRO-ECONOMIC INDICES
FOR 1994 COMPARED TO 1993**

- **Inflation** - 122 %
- **Lev/US\$ Rate of Exchange** - 202 %
- **Indigenous Coal Price** - 30 %
- **NEK Receivables**
/ Annual Revenues Ratio / - 17.5 %
- **Average Electricity Selling Rate**
as on 1.06.95 US\$/kWh - 0.0195
as on 1.09.95, US\$/kWh - 0.027

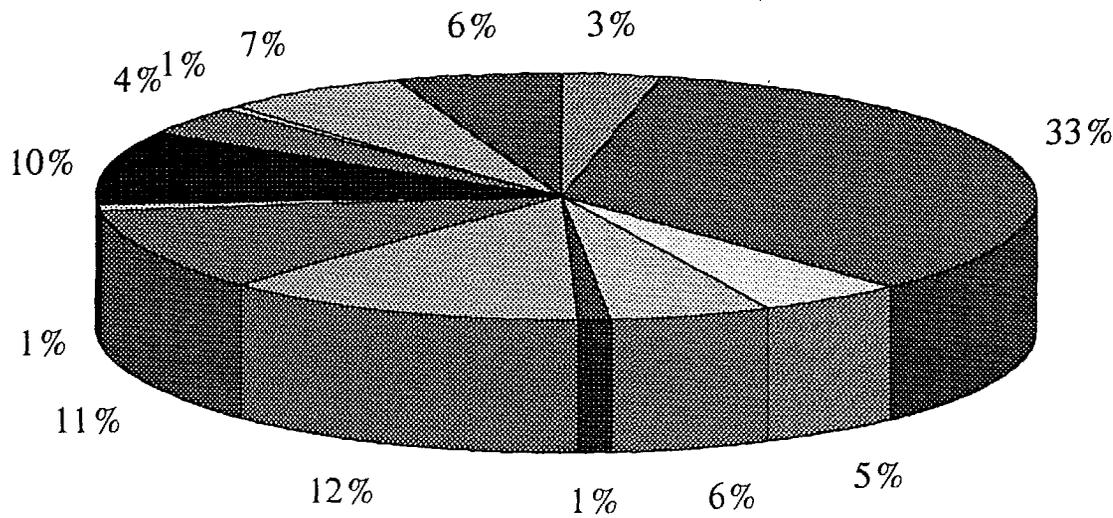
Figure 6

Costs Components for 1993



- Raw Materials and Consumables
- Fuels
- Energy
- Others
- Insurance
- Depreciation
- Overhauls
- Employee benefits
- Salaries
- Social security
- Retraining and unemployment fund
- Financial costs
- Contingencies

Costs Components for 1994



- Raw Materials and Consumables
- Fuels
- Energy
- Others
- Insurance
- Depreciation
- Overhauls
- Employee benefits
- Salaries
- Social security
- Retraining and unemployment fund
- Financial costs
- Contingencies

Figure 7

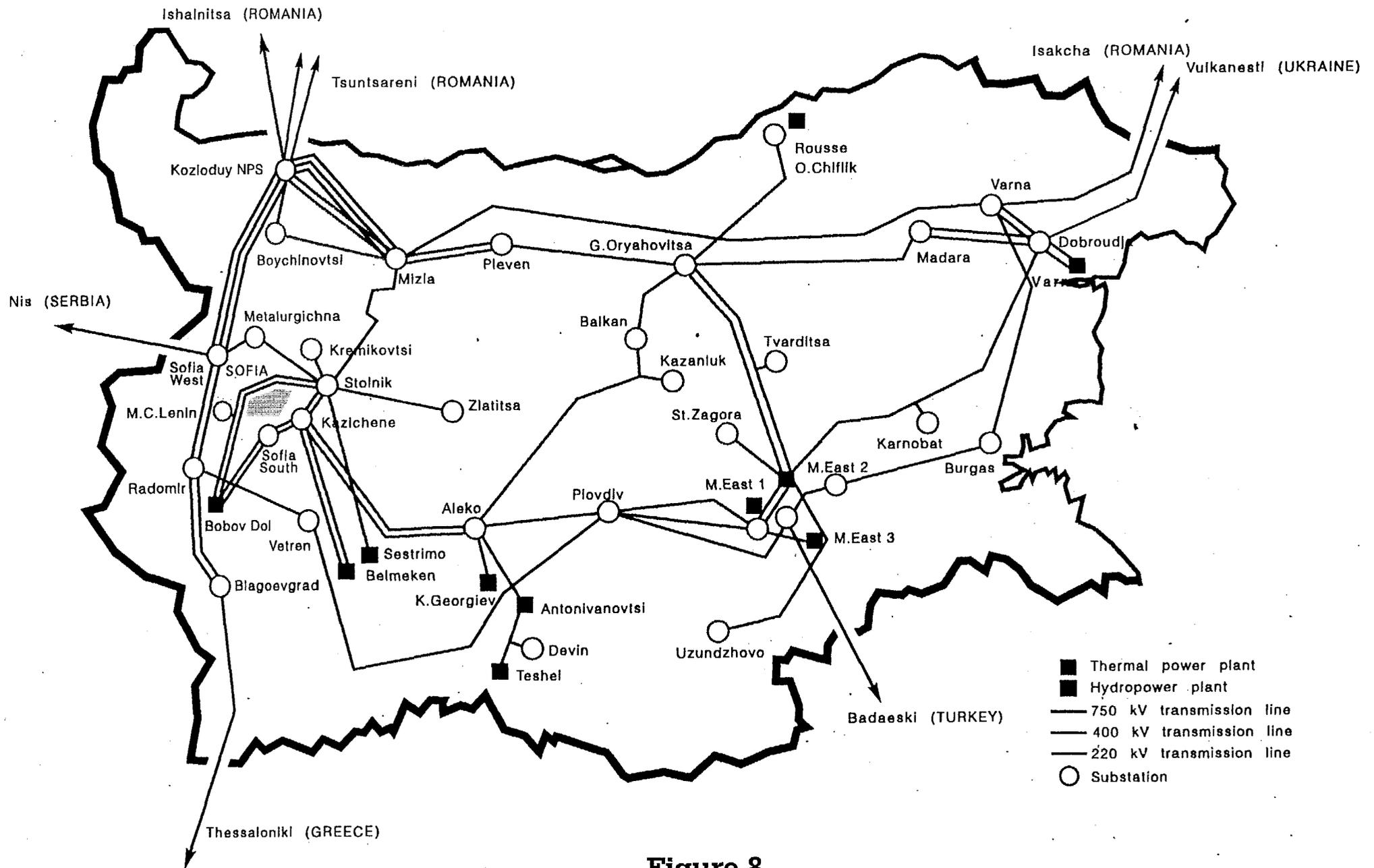


Figure 8

12

FUNDAMENTAL PRINCIPLES OF ENERGY LEGISLATION

- **compliance to market economy principles ;**
- **adherence to the principles of the European Energy Charter and the relevant Acts;**
- **supply security;**
- **energy efficiency improvement;**
- **to enhance the regulatory body powers and functions for fuel price and electricity tariff monitoring;**
- **elimination of the Company's monopoly ;**
- **licensing of energy site construction and repair organisations ;**
- **clear definition of Governmental body powers in the sector.**

Figure 9

NEK'S PRIORITIES

- reliable and high-quality power supply to customers;
- reduction of Transmission, Transformation and Distribution Losses ;
- improving customer services;
- improving corporate finance management;
- improving the system of electricity pricing;
- development of telecommunications.

Figure 10