

Reference proportion of power utility company EPS capital, which represents a sustainable structure for simple reproduction is 40% of investments in new, and 60% of investments in overhauls with the modernization of existing power facilities.

By varying of this capital structure and the manner of its financing and taking into account the total operating costs of EPS, the following cost prices of electricity have been calculated:

0.0519 eur/kWh (when the capital structure is 100% overhaul)

0.0643 eur/kWh (when the capital structure is 40% new investments and 60% overhaul)

0.0831 eur/kWh (when the capital structure is 100% new investments)

Based on the applied analysis and calculated prices, it has been concluded that capital overhauls from the 21st to the 50th year since the construction, are more cost-effective solution due to significantly lower costs per kWh produced, compared to costs of investments in a new power facility which could be used without capital overhauls for 20 years.

Due to lack of financial resources, there have been no investments in new facilities in EPS for more than 30 years, so the assumption of authors is that the loan costs for them are 20% of the new investment value. The solution which has been resorted to is to increasingly invest in capital overhauls, the cost of which amounts up to 80% of the value of existing power facilities, so, with more modest resources (and hence with a lower price), EPS manages to meet the needs of consumers.

It is common that energy facilities, such as power plants, transformer stations, transmission and distribution networks, are used in operation for about 50 years, so the means of financing, for larger amounts of capital overhauls with the revitalization and expansion of modern solutions (filters for gases purification, performances improvement, installation of modern control devices, etc.), are provided from the loans. This is the case when, for example, in the next 30 years three major overhauls are performed at 30% of the new power plant price, extending lifespan each time for 10 years on average. This means that with these investments of 90%, the lifespan is extended for 30 years (from the 21st to the 50th year of operation), which is more economical than building a new power plant, which could be used without capital overhauls only for 20 years.

As authors have shown, annual capital costs for the production of coal per 1 KW of installed capacity of power plant (more specifically for the production of 5.500 kWh of electricity) are:

For the investment in a new mine 52.5 eur/Kw, or 0.00954 eur/kWh

Costs for four capital overhauls at a cost of 4×210 eur/kW for 30 years give annual costs of 28 eur/kW or 0.0051 eur/kWh.

As far as the costs for the electricity transmission through transmission and distributive network are concerned, the starting points are capital costs for investments and capital

overhauls of the network and annual operational costs, which are determined as the sum of costs for the ongoing maintenance with material costs, costs for employees' earnings and other costs for employees. In addition to this, costs for electricity losses in transmission and distribution network of EPS must be included.

Specific calculations and analyses that the average value of unit costs for production and distribution of electricity to consumers, depends on a number of factors. It may depend on the structure of the source for the production of electricity (thermal power plants, hydro power plants or RES), as well as on the share of newer energy facilities for which there are still financial obligations of loan servicing in relation to the facilities that have been in operation for more than 20 years and for which means for capital overhauls in the next 30 years are provided.

It is realistic to expect that there will be a significant increase in average unit costs, when the share of electricity becomes sufficiently significant because it is the energy for which the unit costs are up to two times bigger, so this could be the next task for the calculation and analysis.