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Forecasting the consumption of electricity by enterprises of the national economy complex in conditions of incomplete information

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Abstract. The paper considers the problem of planning the demand for electricity for sales organizations using intellectual data analysis. Due to the fact that planning of consumption volumes opens up new economic opportunities for enterprises when entering the wholesale electricity market, forecasting is a necessary economic lever for making optimal decisions in the process of planning and allocating resources. Thus, the purpose of the study was to obtain a reliable forecast of electricity consumption. It should be noted that the forecasting of electricity consumption will improve the efficiency of management decisions for both electric grid companies and individual energy-intensive consumers (industrial enterprises). In the course of the study, a set of methods of scientific knowledge, including machine learning methods, was applied. As a result, several machine learning models were built, with the help of which a forecast of electricity consumption was made. A comparative analysis of the results of forecasting by quality metrics was carried out: the average absolute error of the forecast and the coefficient of determination. The best values of these metrics were obtained using a model based on the CatBoostRegressor algorithm. Therefore, in order to predict power consumption, the use of the developed model, in our opinion, will be most appropriate.

Key words: electric power industry, machine learning, regression, clustering, forecasting

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