There is a demand for decision support tools that can model the electricity markets and allows to forecast the hourly electricity price. Many different approach such as artificial neural network or support vector regression are used in the literature. This thesis provides comparison of several different estimators under one settings using available data from Czech electricity market. The resulting comparison of over 5000 different estimators led to a selection of several best performing models. The role of historical weather data (temperature, dew point and humidity) is also assesed within the comparison and it was found that while the inclusion of weather data might lead to overfitting, it is beneficial under the right circumstances. The best performing approach was the Lasso regression estimated using modified Lars.