Energy is an everyday necessity for all of us, and providing a solution for optimizing the cost the use of energy is our goal. The Hornsdale Power Reserve is a company that provides electricity to homes which plays a role in the stability of the price in the electricity market located in southern Australia. Our team aims to help the company with a better decision in the energy market.

Different aspects of energy cost minimization may allow us to apply machine learning techniques to predict the best solution for Hornsdale Power Reserve. We focus on first stabilizing the throughput ratio of the energy generated by wind power, and applied regression model, LSTM, and CART model to forecast the throughput ratio. The importance of the throughput ratio in an energy system is the key to save money from the unnecessary loss of energy.

Another aspect is closely related to one of the main task of Hornsdale Power Reserve, which is the charging and discharging in the energy exchange market. The price plays an important role, and we hope to predict the price by using LSTM and a well-known time-series model, ARIMA. By implementing these models, we can help provide the optimal solution for Hornsdale Power Reserve to save money and energy.