

## ***ABSTRACT***

*One way to fulfill the electricity needs of the community is by using renewable energy, for example solar power plants roof on-grid. Solar power plants utilize the intensity of sunlight to produce electrical energy using photovoltaic technology. The use of on-grid solar power plants has now been widely applied in Indonesia, one of which is the use of rooftop solar power plants on-grid at Al Mukaromah Islamic Boarding School.*

*So this research was conducted to determine the performance of the solar power system at the Al Mukaromah Islamic Boarding School from an economic standpoint. The economic value parameter used is the calculation of cost savings on electricity bills paid to PLN before and after using solar power plants and COE calculations.*

*The results of this final project research show that renewable energy is realized at the Al Mukaromah Islamic Boarding School by using a rooftop solar power generation system. on-grid. After testing performance at the Al Mukaromah Islamic Boarding School, the system is suitable for use with a total energy of 2,953 kWh/year, performance ratio of 76%, and irradiation received in a year reaches 1,464.2 kWh/m<sup>2</sup>. The potential for solar energy at the Al Mukaromah Islamic Boarding School is said to be quite effective from an economic standpoint, with a COE of Rp. 1,665.7/kWh.*

*Keywords: solar power plant on-grid, savings on electricity bills, COE, energy production.*