

## ABSTRACT

At present the use of solar panels as a renewable energy source is increasing. The use of an easy and efficient photovoltaic (PV) panel can attract interested people to switch to renewable energy sources, so that non-renewable energy sources will slowly be abandoned. The existing public street lighting systems are starting to use solar panels. PV panels are capable of processing input voltages based on the intensity of solar radiation and are also influenced by air temperature.

The research aimed to design a Maximum Power Point Tracking (MPPT) based solar charge controller to be used in automatic public street lighting. The study was conducted by applying the MPPT algorithm with the Perturb & Observe (P&O) method.

In the research conducted it was found that the results of testing during the daytime the battery with a capacity of 17AH can be fully charged in 9.71 hours. At night the fully charged battery can supply a load of LED lights with 30 watts of power for 8 hours and 50 watts for 4 hours.

**Keywords:** *Solar Charge Controller, Maximum Power Point Tracking, Perturb & Observe, photovoltaic.*