ABSTRACT

The flow of increasingly rapid technological developments triggers a lot of energy needs, especially electrical energy. in this case shows that electricity is an important basic need for mankind. To reduce this impact, it is necessary to use renewable energy, one of which is photovoltaic. Photovoltaic itself can reduce the use of electrical energy. This research uses the configuration of the IEEE 30 Bus network system which will be combined with renewable energy. The method used is the Newton Raphson method, the Newton Raphson method itself is often used in power flow studies. The output is the voltage for each bus and bus channel which will be combined with the PV installation.

The simulation results ensure that the installation of PV with a certain capacity at each bus voltage and the addition of bus lines can reduce the loss rate on each bus, placing the PV installation with the best loss rate on bus 5 with the best reduction proportion compared to other buses. In this simulation it takes 4x iterations and the maximum performance discrepancy is 7.53326 x 10^{-6} indicating that the approach that has been taken is close to an accurate solution.

Keywords *: Newton Raphson, Renewable Energy, IEEE 30 Bus, Photovoltaik*