

## ABSTRACT

The emission of CO<sub>2</sub> gas and the large use of energy in the second industrial revolution cannot be avoided due to the cycle of human life. CO<sub>2</sub> gas emissions that cause climate change and global warming have an impact on the environment. It was found that the largest source of CO<sub>2</sub> emissions is obtained by the building sector globally. As a result of CO<sub>2</sub> gas emissions more and more have an impact on the environment such as an increase in the earth's temperature and the depletion of the ozone layer. One solution to this problem is the application of green buildings. The application of green buildings is the application of sustainable site development, improving air and energy efficiency, reducing waste and emissions, using environmentally friendly building materials, and improving the quality of the indoor environment more efficiently than conventional designs. This study describes the comparison of energy baselines in buildings that refer to the standards of GBCI and ASHRAE. This research also investigates three building energy saving methods, namely EnergyPlus simulation, worksheet calculation, and EDGE simulation. The comparison of the energy baseline with energy consumption savings can be obtained by estimating percentage energy savings. Comparative analysis of energy baselines is made to estimate final energy use.

**Keywords:** *green building, baseline, EnergyPlus, GBCI, EDGE, ASHRAE*