# DEVELOPMENT OF MATLAB-BASED SOFTWARE FOR PEAK LOAD ESTIMATION AND FORECASTING: A CASE STUDY OF FACULTY OF ENGINEERING, IMO STATE UNIVERSITY OWERRI, IMO STATE, NIGERIA

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## ABSTRACT

Peak load demand is used in energy demand management to describe a period in which electrical power is expected to be provided for a sustained period at a significantly higher than average supply level. In power system development planning, effort is made to accurately estimate the immediate peak load demand as well as forecast the future Peak load demands for more years ahead. This is usually meant to prevent overloading in power systems, which when they occur often cause more harm and would require more resources to fix. In this paper, a MATLAB -based software is developed for peak load estimation and forecasting. A case study of faculty of Engineering in Imo State University (IMSU) Owerri is selected for the data collection and testing of the software. The software has a user-friendly peak load estimation module for collecting and estimating the peak load based on the power rating of electrical appliances in the faculty. Then a versatile load forecasting module is also designed to forecast the future peak load demand based on the present peak load. In all, for any selected forecast period, the software generates the existing Peak load estimation and forecasted peak load values in tables and graphs.

**Keywords:** Peak load, Estimation, Forecasting, MATLAB, Power Factor, Waterfall Methodology, Logarithmic Model.