# SOLVING THE UNIT COMMITMENT PROBLEM
# BY USING HEURISTIC METHOD

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# ABSTRACT

This paper has presented a method to solve the unit commitment (UC) problem. The main purpose of UC is to minimize the generation cost with several constrain involved. In this paper the UC problem will be solved using a heuristic method or priority list which is a simple method to solve UC problem. The proposed technique to solve UC problem is to be tested on two systems. The system 1 consist of three generating bus with only consider the simple peak valley load pattern. While system 2 is consist of 69 generating unit, adding with economic dispatch and divide into certain periods of time of 24 hours. This system data were taken from Tenaga Nasional Berhad (TNB). Those data were simulated in MATLAB's programming to generate a result of the theoretical information. As a result, an appropriate data on the combination of generating units to serve the forecast load of the system at each stage of the load cycle will be obtain from this simulation and analysis. Finally, the total fuel cost is calculated for both systems. However the system 2, the total saving are calculate from the Economic Dispatch.

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# INTRODUCTION

## 1.1 Background of study

The increasing demand for energy especially for electricity is one of the serious problems nowadays. This dilemma estimated to be continuing due to the development of the industry and the increasing of human population. These problems are involved in supply the reliable amount of electricity to fulfill the demands and the price rates of the electricity need to be reduced or maintain since the cost of generate energy is getting higher [8].

The load demand is varies since it depend on the human activities. It is known as daily load pattern. In a single day, they are maximum loads during the daytime while they are minimum demand at late night because most of the population is sleeping [1].In a week, there is difference between peak and off-peak hours between weekdays and weekends. Most people use less electricity on Saturday than on weekdays, and less on Sundays than on Saturdays. If sufficient generation to meet the peak is kept on line throughout the day, it is possible that some of the units will be operating near their minimum generating limit during the off-peak period.

Therefore, unit commitment (UC) is required in the scheduling and dispatch of the power system. It is the process to determine the combination of available generating unit on the power grid whether to turn on or off at a given hour. It also involves the sequence of the generating units which should shut down and for how long. On the other hand, it is not economical to run all generating units in order to provide sufficient load demand [2].