CASE STUDY OF SHORT TERM LOAD FORECASTING FOR WEEKENDS

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UNIVERSITITEKNOLOGI MARA

MOHD FADHIL BIN MUSA
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, MALAYSIA
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ABSTRACT

This project report presents the short term load forecasting (STLF) to predict load demand in future. Short term load forecast (STLF) is a method to predict day ahead 24 hour load demand and two factors were considered which is the time and temperature. The objectives of this project are analyzing the profile or pattern and predict load demand during weekends. This project is use Artificial Neural Network (ANN) method to solve the problem using MATLAB software. The average error by using mean absolute percentage error (MAPE) for Friday, Saturday and Sunday are 1.25%, 1.39% and 2.04% respectively.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

Load forecasting is one of the central functions in power systems operations. Load forecast can be divided into three categories that are short term forecast, usually from one hour to one week, medium forecast, usually from a week to a year and long term forecast which are longer than a year[l][2]. Load forecast is extremely important for energy suppliers in electric energy generation, transmission, distribution and market. Load forecast helps an electric utility to make important decision including decision on purchasing and generating electric power, load switching and infrastructure development. The short term load forecast (STLF) is also important to an electric utility such as for optimum operation planning, unit commitment, economic dispatch, load management [1][2][3] and also help to estimate load flow in future that can prevent overloading.

In order to achieve high forecasting accuracy and speed, it is required to know the factors that affect the load. Some of these factors are the type and time of day, the weather conditions of the forecasting area, the season, etc. Since most days have different load profiles, it is necessary to have a day type. Time of the day is an important factor in short term load forecasting. It is required to know the forecasting time of the day because the level of demand at any time of the day is different. Therefore, the relationships between these factors and the load demand need to be determined so that the forecasts may be as accurate as possible.

With power systems growth and the increase in their complexity, many factors have become influential to the electric power generation and consumption (e.g., load management, energy exchange, pricing, independent power producers, non-conventional energy, generation units, etc.). Therefore, the forecasting process has become even more complex, and more accurate forecasts are needed [4].