ABSTRACT

Electric power plays a vital role in economic growth and development of a region. There is a strong co-relation between the human development index and per capita electricity consumption. Providing adequate energy of desired quality in various forms in a sustainable manner and at a competitive price is one of the biggest challenges for all the developing countries. To meet the fast growing electric power demand, on a sustained basis, meticulous power system planning is required. This planning needs electrical load forecasting, as it provides the primary inputs and enables financial analysis. Accurate electrical load forecasts are helpful in formulating load management strategies in view of different emerging economic scenarios, which can be dovetailed with the developmental plan of the region.

Although, many studies have been carried out on electrical load forecasting for the entire county or state, apparently there are no studies on long term electrical load forecasting and energy planning for an isolated remote region.

The objective of this work is to understand various long term electrical load forecasting techniques, assess its applicability and to formulate a suitable model for long term electrical load forecasting for an isolated remote region under different growth scenarios taking into consideration Demand Side Management, price and income effect.

Andaman and Nicobar (India), a group of 570 Islands situated in Bay of Bengal is taken as a case to carry out the above study. The long term electrical load forecasting results obtained from the proposed model (hybrid) are compared with the results obtained from End – Use, Econometric and Artificial Neural Network methods. The hybrid model also gives long term electrical load projections for different economic scenarios. As a part of the study, a software is developed to capture primary survey data, monthly consumption detail and generates various reports for different category of consumers.

Key words: long term electrical load forecasting, electrical energy consumption, electrical energy requirement