عنوان مقاله:

Using improved time of use demand response in optimal operation of microgrid

محل انتشار:

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خلاصه مقاله:

This paper proposes a stochastic model for optimal energy management with the goal of cost minimization. In this model, the uncertainties related to the forcasted values for load demand and market price are modeled by two stages stochastic programming. A mathematical model is developed to compute the optimal operation schedule that concludes improved Time of use (Tou) demand response. Wind turbine, photovoltaic, fuel cell, and diesel generator are considered as the sources along with energy storage system (ESS) for supplying electricity to the microgrid. Operation of a micro grid has been investigated in both grid-connected mode and isolated mode. The main objective is to meet the forecasted demand by optimal scheduling of available and forecasted generation sources and reduce total cost. For modeling stochastic processes, Monte Carlo method has been used to generate scenarios. The problem is formulated as two stages stochastic programming problem and solved using GAMS software. Simulation results show the usefulness of the proposed method in improving the load curve, reducing the peak load and operating costs, prevent load shedding, and increasing reliability of the system.

کلمات کلیدی:

demand response; micro grid; optimal operation; two stage stochastic programming