

Abstract

Environmental concerns and high prices of fossil fuels increase the feasibility of using renewable energy sources in smart grid. Nowadays many homes adopt the use of renewable energy sources to satisfy their load demand. In this paper we propose a mechanism for scheduling load demand of home appliances according to the availability of renewable energy and varying price of grid energy. Binary linear programming is used to model the proposed mechanism. Two types of appliances are used in this model: 1) Must run appliances. 2) Scheduled appliances. The proposed mechanism aims to minimize smart home electricity cost by maximizing the usage of renewable energy. Simulation shows that the proposed energy scheduling mechanism minimizes total electricity cost by 48% and maximizes the used renewable energy to be 65% of the total generated renewable energy.