

Abstract: A Bargaining Approach to Optimizing Load Shedding in Islanded Microgrid Operation

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Abstract

In islanded operation mode of a microgrid, when the power imbalance is occurred by supply shortage, a load shedding is generally used. Against the backdrop, some game theoretic approaches have been proposed for a reasonable and fair load shedding. However, the load-shedding schemes consider that load amounts use continuous values. In practice, some loads use discrete values. In this paper, we define a load-shedding problem with consideration of the discrete characteristic of load demands. To solve the load-shedding problem, we employ a game theoretic approach. The load-shedding scheme is divided into two steps. The first step is to decide the amount of load to be shed for each load. Taking the discrete characteristic into consideration, the supplied power may not match the power allocated by the load-shedding scheme. Thus, if there is the remainder of the supplied power, the second step is initiated to distribute the remaining power among the loads concerned. To show the feasibility of the proposed scheme, a numerical analysis is performed.

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