

عنوان مقاله:

Presenting Demand Side Management in Smart Grid Via Bilevel mechanism

محل انتشار:

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خلاصه مقاله:

Smart grids execute Demand Side Management as a vital electricity distributed generation to supply the total demand. However, aggregating demand side schedule provided by individual loads will be difficult matter. So, individual responsive loads are Aggregated by Demand Side aggregator (DSA). In other words, The DSA aggregates DR programs by playing a mediator role between individual loads and smart grid. This paper presents different scheduling approaches to model Demand Side Management in the smart grid, namely: Single approach (SA) and Bi-level approach (BLA). In SA, smart grid imports electricity from electricity market and also aggregates Demand Side Management provided by individual loads to supply its total loads. However, fair transaction between smart grid and DSA is implemented through BLA. In BLA, DSA aggregates individual loads and negotiates with the smart grid to find out optimal contract price for executing DR programs. On the one hand, the DSA maximizes its provided profit by offering aggregated Demand Side Management to smart grid and on the other hand, the smart grid aims to optimize its costs to procure demand of loads. The proposed BLA is transferred into a single level optimizing problem implementing its Karush-Kuhn-Tucker (KKT) optimality conditions. Finally, The efficiency of the presented model is .verified through the case studies and analysis of the obtained results

کلمات کلیدی:

Bilevel Problem, Demand Side Management, Demand Side Management aggregator, Karush-Kuhn-Tucker, Responsive loads, Single approach, Smart grid

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