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Abstract Due to the double uncertainty of wind power output and electricity price, it is difficult to optimize the bidding decision of wind power system in the day-ahead market. The energy storage device has the ability to move electricity in time and space, which can assist wind power to better participate in market competition. Therefore, this paper proposes a day-ahead bidding strategy for wind-storage systems based on information difference decision theory. This strategy takes into account the three physical operation constraints of wind power, energy storage, and wind-storage systems, and aims to maximize the net present value of wind-storage day-ahead market profits. The uncertainty of electricity price is described by the Info-Gap Decision Theory (IGDT) model, and the day-ahead bidding strategy for wind-storage system proposed in this paper is formed. The effectiveness of the proposed method is verified by the actual wind power output data.

Keywords Bidding strategy; Info-Gap Decision Theory; Risk Preference; Wind-storage system.