L. Chen, X. Zhao, D. Li, J. Li and Q. Ai, Optimal Bidding Strategy for Virtual Power Plant Using Information Gap Decision Theory, 2020 5th Asia Conference on Power and Electrical Engineering (ACPEE), Chengdu, China, 4–7 June 2020, pp. 122–128, doi: 10.1109/ACPEE48638.2020.9136240.

Abstract Virtual power plant (VPP) faces a variety of uncertainties during operation, which makes it output stability and market competitiveness low. For this purpose, this paper proposes an optimal bidding strategy for VPP. The proposed model applies information gap decision theory (IGDT) to deal with the uncertainties posed from load and day-ahead (DA) market clearing price. First, a deterministic model is constructed to obtain expected maximum deterministic profit. Then, considering the uncertainties an IGDT-based profit function for VPP in day-ahead and balancing markets is proposed. Based on IGDT, both a robust scheduling strategy for the risk-aversion decision maker and an opportunistic scheduling strategy for the opportunity-seeking decision maker are presented. The results of case studies validate the effectiveness of the proposed strategy under various uncertainties of load and day-ahead market clearing price.