

Yi Gao, Wangxia Yang, Shupeizhang, Dongmei Wang and Jinfu Chen, 2023, A reconfiguration method for distribution network with countywide PV generation using information gap decision theory, 2023 IEEE Sustainable Power and Energy Conference (iSPEC), 28–30 November 2023, Chongqing, China, DOI: 10.1109/iSPEC58282.2023.10403093.

**Abstract** Reconfiguration is an important method to optimize the operation of distribution networks in the context of photovoltaic integration throughout the county. Due to the uncertainty of PV power and the limited accuracy of prediction techniques, the existing reconfiguration methods do not adequately consider the error between the actual power and the predicted power. This paper proposes a distribution network reconfiguration method using information gap decision theory to improve the active adaptability to photovoltaic fluctuations from the decision point of view, while limiting the active power loss and ensuring the safety of operation. The method is tested on IEEE 33-bus system with PV integrated in each bus to verify its effectiveness. The economic benefits, tolerable PV fluctuation ranges and bus voltages are also discussed.

**Keywords** network reconfiguration, distribution network, countywide PV integrated, IGDT.