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Abstract Considering the characteristics of source, grid, load, and storage components as well as power grid operation simulation, a basic framework and model for coordinated optimal planning of source-grid-load-storage is established. Based on the information gap decision theory (IGDT), an uncertainty set for renewable energy output and load demand is constructed. With the objective of maximizing the comprehensive deviation coefficient, a robust optimization planning model for source-grid-load-storage considering multiple uncertainties is developed and linearized for solution. Finally, the proposed model is validated using a case study based on an actual urban power grid.

Keywords new energy resources; source-network-load-storage; information gap decision theory; coordinated optimize planning; multi-uncertainty.

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