

A NEW MODEL APPLIED TO THE PLANNING OF DISTRIBUTION SYSTEMS FOR COMPETITIVE ELECTRICITY MARKETS

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TÓM TẮT:

Recently, the restructuring of electricity market and the development of technology have been enhancing the application of distributed generators (DGs) and renewable energy resources. Hence, the planning of distribution systems (PDS) for competitive electricity markets (CEMs) has encountered impacts which need to be investigated. This paper proposes a novel approach for optimizing distribution system planning in CEMs with the presence of DGs. The proposed model can determine equipment sizing and timeframe required for upgrading power network in order for utilities to purchase electric energy from electricity markets. Besides, the problems of DG system development (Optimal DG displacement, sizing, technology selection and installation period) in distribution planning to meet the demand growth will be solved. The model uses the objective function that minimizes the total cost of network (feeders and transformers) upgrading, new DGs installation, distribution systems operating, and electric energy purchasing from CEMs. The proposed model is tested using an 33 bus 22kV radial feeder. The calculation is programmed in GAMS environment.