

国家重点基础研究项目

考虑静态安全约束的金融输电权拍卖交流最优潮流模型

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摘要:

金融输电权(financial transmission right, FTR)作为一种规避阻塞风险的金融工具,已在电力市场中得到了实际应用。提出了一种考虑预想事故状态的FTR拍卖交流最优潮流模型,通过基于蒙特卡罗模拟的交流最优潮流来求解该模型,即将n-1静态安全约束纳入优化模型,应用概率性算法来选取相应的预想事故集,优化求解得到出清结果的期望值及频数分布图。分别用5节点和IEEE-30节点系统进行了验证,结果表明所提模型方法是合理可行的。

关键词:

Implementation of AC Optimal Power Flow Based Financial Transmission Right Auction Model Under Static Security Constraints

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Abstract:

As a financial instrument for hedging risk, financial transmission right (FTR) has been put into application in some electricity markets. Considering the contingency constraints, this paper proposes a new FTR auction model based on AC optimal power flow (OPF) in which the n-1 static security constraints are included, and the AC-OPF based on Monte Carlo simulation is applied to solve the proposed model. Corresponding contingency set is chosen by probabilistic algorithm, and the optimization solution of expectation value and frequency distribution of clearing results is obtained. The proposed method is verified by IEEE 5-bus system and IEEE 30-bus system respectively, calculation results show that the proposed model and method are reasonable and feasible.

Keywords:

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