

电力市场

基于人工神经网络的电力市场输电阻塞预测模型

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摘要:

传统的输电阻塞研究主要集中于输电阻塞发生之后的处理过程, 即阻塞管理, 属于被动消除阻塞情形。文章基于主动预防输电阻塞的思想, 从分析影响输电阻塞的系统线路传输功率、系统总负荷、系统实际出力等相关因素入手, 应用层次分析法建立比较判断矩阵, 以确定各因素阻塞影响的权重。基于此, 建立一种基于神经网络的输电阻塞预测模型, 还提出了一个新的阻塞指标, 即阻塞度, 以美国加利福尼亚州电力市场的数据验证了该模型的正确性和实用性。

关键词:

Artificial Neural Network-Based Transmission Congestion Forecasting Model in Electricity Market Environment

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Abstract:

Main attentions of traditional researches on transmission congestion are paid to the processing procedure for congestion, i.e., the congestion management, so it can be classified into the field of passively eliminating the congestion. Based on the thinking of actively preventing transmission congestion and starting with the analysis on related factors that impact transmission congestion such as transmitted power in transmission lines that impacts transmission congestion, total load of power grid, actual output of power grid, etc., a comparison-discrimination matrix is built by analytical hierarchy process (AHP) to determine the weight of each factor that impacts the congestion. On this basis, an artificial neural network (ANN)-based transmission congestion forecasting model is established, and a novel congestion index, i.e., the transmission congestion degree, is put forward. The correctness and practicality of the proposed model are verified by the data from California electricity market.

Keywords:

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