

电力市场

基于模糊理论的城市电网风险识别与评价

何永秀¹, 戴爱英¹, 杨卫红¹, 方锐¹, LI Furong²

1. 华北电力大学 经济与管理学院, 北京市 昌平区 102206; 2. 巴斯大学, 巴斯 BA2 7AY, 英国

摘要:

为提高城市电网规划的科学性, 需要对城市电网风险进行识别与评价。设计了我国城市电网风险调查问卷, 基于模糊隶属度理论量化了各阶段(规划阶段、可研阶段、建设阶段、运行阶段等)风险的发生可能性和损失程度, 并给出各风险的综合量化分数, 总结出城市电网各阶段应该关注的风险。该方法可为城市电网规避风险提供决策基础。

关键词:

Identification and Evaluation of Risk in Urban Network Planning Based on Fuzzy Theory

HE Yongxiu¹, DAI Aiyong¹, YANG Weihong¹, FANG Rui¹, LI Furong²

1. School of Economics and Management, North China Electric Power University, Changping District, Beijing 102206, China; 2. University of Bath, Bath BA2 7AY, UK

Abstract:

To enhance the scientificity of urban power network planning, it is necessary to identify and evaluate the risks in urban power network. In this paper, a questionnaire of urban power network concerning the risks in domestic urban power network is designed; then based on fuzzy membership theory the possibility of occurring risk in different stages, i.e., planning stage, feasibility study stage, construction stage and operation stage, etc., and the extent of damage are quantized; and then the comprehensive quantization score of each risk are given; finally, the key risks, which special attention should paid to in planning, construction and operation stages of urban power network, are summarized. The proposed method could offer decision base to evade risks in different stages of urban power network.

Keywords:

收稿日期 2009-09-17 修回日期 2010-01-08 网络版发布日期 2010-09-08

DOI:

基金项目:

国家自然科学基金项目(NSFC)(70671042, 70771039); 教育部人文社科基金(07JA790092)。

通讯作者: 何永秀

作者简介:

作者Email: yongxiuhe@126.com

参考文献:

- [1] 杨高峰, 康重庆, Li Furong, 等. 电网规划方案的适应性与风险评估[J]. 电力系统保护与控制, 2008, 36(23): 1-22. Yang Gaofeng, Kang Chongqing, Li Furong, et al. The adaptability and risk assessment in planning scheme of power network[J]. Power System Protection and Control, 2008, 36(23): 1-22 (in Chinese).
- [2] 冯喜春. 电网规划项目经济风险二级模糊评估[D]. 北京: 华北电力大学, 2008.
- [3] 谢敏, 钟金, 吴复立, 等. 基于改进单纯形法的输电网规划项目经济评估[J]. 电力系统自动化, 2006, 30(7): 10-15. Xie Min, Zhong Jin, Wu Fuli, et al. Economic assessment in power transmission network planning project based on improved simplex method[J]. Automation of Electric Power Systems, 2006, 30(7): 10-15(in Chinese).
- [4] 刘铠滢, 蔡述涛, 张尧. 基于风险评判的电网规划方法[J]. 中国电机工程学报, 2007, 27(22): 69-73. Liu Kaiying, Cai Shutao, Zhang Yao. Power network planning method based on the risk estimation[J]. Proceedings of the CSEE, 2007, 27(22): 69-73 (in

扩展功能

本文信息

▶ Supporting info

▶ PDF(333KB)

▶ [HTML全文]

▶ 参考文献[PDF]

▶ 参考文献

服务与反馈

▶ 把本文推荐给朋友

▶ 加入我的书架

▶ 加入引用管理器

▶ 引用本文

▶ Email Alert

▶ 文章反馈

▶ 浏览反馈信息

本文关键词相关文章

本文作者相关文章

PubMed

Chinese). [5] 魏远航, 刘思革, 苏剑. 基于枚举抽样法的城市电网风险评估[J]. 电网技术, 2008, 32(18): 62-66. Wei Yuanhang, Liu Sige, Su Jian. Risk assessment of urban power network based on enumerative sampling method[J]. Power System Technology, 2008, 32(18): 62-66(in Chinese). [6] Wei Sun, Yue Ma. Risk assessment in electrical power network planning project based on principal component analysis and support vector machine[C]. The 7th World Congress on Intelligent Control and Automation, Chongqing, China, 2008. [7] 许满库, 王海鲲, 张东. 电网建设项目风险评估研究[J]. 中国电力教育, 2007(S2): 221-223. Xu Manku, Wang Haikun, Zhang Dong. Risk assessment in power grid construction projects[J]. Electric Power Education in China, 2007(S2): 221-223(in Chinese). [8] 郭仁桀, 王建兴. 考虑气象条件影响的电网风险评估研究[J]. 云南电力技术, 2009, 37(2): 29-43. Guo Renjie, Wang Jianxing. Risk assessment considered the impact of weather conditions in power network[J]. Yunnan Electric Power, 2009, 37(2): 29-43(in Chinese). [9] 刘德全. 浅析青海电网运行的风险及对策[J]. 青海电力, 2007, 26(4): 1-36. Liu Dequan. Risk and countermeasure of Qinghai power system [J]. Qinghai Electric Power, 2007, 26(4): 1-36 (in Chinese). [10] 史慧杰, 葛斐, 丁明, 等. 输电网络运行风险的在线评估[J]. 电网技术, 2005, 29(6): 43-48. Shi Huijie, Ge Fei, Ding Ming, et al. The online assessment of operational risks in transmission network[J]. Power System Technology, 2005, 29(6): 43-48(in Chinese). [11] 程林, 何剑, 孙元章. 线路实时可靠性模型参数对电网运行可靠性评估的影响[J]. 电网技术, 2006, 30(13): 8-13. Cheng Lin, He Jian, Sun Yuanzhang. The impact on reliability evaluation of power grid operation from line real-time model parameters[J]. Power System Technology, 2006, 30(13): 8-13(in Chinese). [12] 赵珊珊, 周子冠, 张东霞, 等. 大区互联电网动态稳定风险评估指标及应用[J]. 电网技术, 2009, 33(2): 68-72. Zhao Shanshan, Zhou Ziguan, Zhang Dongxia, et al. Dynamic stability risk assessment indicators and application in large area interconnected power syetem[J]. Power System Technology, 2009, 33(2): 68-72(in Chinese). [13] 张节潭, 胡泽春, 程浩忠, 等. 电力系统规划与静态安全评估软件设计与实现[J]. 电网技术, 2008, 32(17): 52-57. Zhang Jietan, Hu Zechun, Chen Haozhong, et al. Power system planning and the design and implement of static security assesement software[J]. Power System Technology, 2008, 32(17): 52-57(in Chinese). [14] 杨以涵, 艾琳, 姜彤, 等. 基于效益风险函数的电磁环网风险评估与控制[J]. 电网技术, 2009, 33(7): 65-70. Yang Yihan, Ai Lin, Jiang Tong, et al. Electromagnetic loop network risk assessment and control based on benefit-risk function[J]. Power System Technology, 2009, 33(7): 65-70(in Chinese). [15] 赵珊珊, 张东霞, 印永华. 智能电网的风险评估[J]. 电网技术, 2009, 33(19): 7-10. Zhao Shanshan, Zhang Dongxia, Yin Yonghua. Risk assessment of the smart grid[J]. Power System Technology, 2009, 33(19): 7-10(in Chinese).

本刊中的类似文章