

国家重点基础研究

基于技术成熟度理论的智能输电网多阶段投资决策模型

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摘要:

在智能电网建设背景下, 输电网投资面临各种潜在的市场风险, 对投资决策的灵活性提出了较高的要求。应用技术成熟度理论分析智能输电网投资决策问题, 根据技术成熟度等级划分智能输电网的有效投资阶段, 建立基于技术成熟度的智能输电网多阶段投资决策模型, 以确定最优投资方案及各阶段的投资资金数量。以IEEE-24节点系统为例分析考虑输电线路、晶闸管控制串联电容器补偿方案的3阶段智能输电网投资决策问题, 验证了上述模型的正确性和有效性。

关键词: 技术成熟度 多阶段投资 智能输电网

A Decision-Making Model of Multi-Stage Investment for Smart Transmission Grid Based on Technology Readiness

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Abstract:

The investment of transmission grid is faced with various potential market risks during the construction of smart transmission grid, and this condition makes higher demand on the flexibility of investment decision-making. By means of analyzing investment decision-making of smart transmission grid by technology readiness and marking off effective investment stages for smart transmission grid based on technology readiness level, a technology readiness based multi-stage investment decision-making model is built to determine optimal investment project and the amount of investment in different stages. Taking IEEE 24-bus system for example, a three-stage investment decision-making for smart transmission grid, in which the transmission lines, thyristor controlled series compensator (TCSC) are considered, is analyzed to verify the correctness and effectiveness of the built model.

Keywords: technology readiness level multi-stage investment smart transmission grid

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